

VIRTUAL

28TH IAEA FUSION ENERGY CONFERENCE



FEC 2020

28th IAEA Fusion Energy Conference

PROGRAMME, CONTRIBUTIONS, and CONFERENCE MATERIAL

10–15 May 2021

Organized by the



IAEA

International Atomic Energy Agency

Hosted by the Government of France
through the



French Alternative
Energies and Atomic
Energy Commission (CEA)

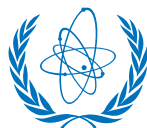


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CN-286
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Organized by the:



IAEA

International Atomic Energy Agency

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*Hosted by the Government of France
through the*

French Alternative Energies and Atomic Energy Commission (CEA),



and the

ITER International Fusion Energy Organization.



28th IAEA

Fusion Energy Conference

10–15 May 2021

Virtual Event

Programme &

List of Contributions &

Linked Conference Materials

Colophon

This book has been assembled from the synopsis sources submitted by the contributing authors via the [Indico](#) conference management platform. Layout, editing, and typesetting of the book, including customized T_EX & L^AT_EX macros, was done by Paul Knowles, LogrusData, Vienna, Austria. The font is T_EX Gyre Pagella, a decendent of Hermann Zapf's Palatino.

This book is PDF hyperlinked: activating coloured text will, in general, move you throughout the book. Internal links are [close to lime green](#) while links leading to other websites are [desaturated blue](#).

Introduction

The International Atomic Energy Agency (IAEA) fosters the exchange of scientific and technical results in nuclear fusion research and development through its series of Fusion Energy Conferences. The 28th IAEA Fusion Energy Conference (FEC 2020) aims to provide a forum for the discussion of key physics and technology issues as well as innovative concepts of direct relevance to the use of nuclear fusion as a future source of energy.

With a number of next-step fusion devices currently being implemented— such as ITER (“International Thermonuclear Experimental Reactor”) in Cadarache, France, and the Wendelstein 7-X stellarator in Greifswald, Germany— and in view of the concomitant need to demonstrate the technological feasibility of fusion power plants, as well as the economic viability of this method of energy production, the fusion community is now facing new challenges. The way these challenges are addressed will determine the direction of research in the present and coming decades.

The scientific scope of FEC 2020 is, therefore, intended to reflect the priorities of this new era in fusion energy research. The conference aims to serve as a platform for sharing the results of research and development efforts in both national and international fusion experiments that have been shaped by these new priorities, and to thereby help in pinpointing worldwide advances in fusion theory, experiments, technology, engineering, safety and socio-economics. Furthermore, the conference will also set these results against the backdrop of the requirements for a net energy-producing fusion device and a fusion power plant in general, and will thus help in defining the way forward.

With the participation of international organizations such as the ITER International Fusion Energy Organization and the European Atomic Energy Community (Euratom), as well as the collaboration of more than 40 countries and a great number of research institutes, including those working on smaller plasma devices, it is expected that this conference will, like previous conferences in the series, serve to identify the possibilities and means for continuous and effective international collaboration in this area.

The 28th IAEA Fusion Energy Conference is being organized by the IAEA through the French Alternative Energies and Atomic Energy Commission (CEA) and the ITER Organization. Previous conferences in this series were held in Salzburg (1961), Culham (1965), Novosibirsk (1968), Madison (1971), Tokyo (1974), Berchtesgaden (1976), Innsbruck (1978), Brussels (1980), Baltimore (1982), London (1984), Kyoto (1986), Nice (1988), Washington DC (1990), Würzburg (1992), Seville (1994), Montreal (1996), Yokohama (1998), Sorrento (2000), Lyon (2002), Vilamoura (2004), Chengdu (2006), Geneva (2008), Daejeon (2010), San Diego (2012), St. Petersburg (2014), Kyoto (2016), and Ahmedabad (2018).

| | Name | Country/International Organization |
|-------------|---------------------|------------------------------------|
| Chair: | Elizabeth Surrey | UK |
| Vice Chair: | Richard Buttery | USA |
| | Ivan Calvo | EU |
| | Arun Chakraborty | India |
| | Rajaraman Ganesh | India |
| | Michael Gorley | EU |
| | Andre Grosman | EU |
| | David Hatch | USA |
| | Matthew Hole | Australia |
| | Jerry Hughes | USA |
| | Shunsuke Ide | Japan |
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| | Richard Pitts | ITER |
| | Mario Podestà | USA |
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| | Yasuhiko Sentoku | Japan |
| | Ivan Vargas-Blanco | Costa Rica |
| | Elisabeth Wolfrum | EU |
| | Min Xu | P. R. China |

Conference Secretariat:

IAEA Scientific Secretaries: **Ms Sehila M. González de Vicente**

Mr Matteo Barbarino

Mr Danas Ridikas

IAEA Scientific Officer: **Mr Shutaro Takeda**

Physics Section
Division of Physical and Chemical Sciences
Department of Nuclear Science and Applications
International Atomic Energy Agency
Vienna International Centre, PO Box 100
1400 Vienna, Austria
Fusion-Physics@iaea.org

IAEA Administration and Organization:

Ms Martina Khaelss

Ref.: CN-286
Conference Services Section
Division of Conference and Document Services
Department of Management
International Atomic Energy Agency
Vienna International Centre, PO Box 100
1400 Vienna, Austria
M.Khaelss@iaea.org

Host Country Organization:

Mr Alain Bécoulet

ITER Organization
Route de Vinon-sur-Verdon, CS 90_046
13067 St Paul Lez Durance Cedex, France
Alain.Becoulet@iter.org

Participation in an IAEA Scientific Meeting

Governments of Member States and those organizations whose activities are relevant to the meeting subject matter are invited to designate participants in the IAEA scientific conferences and symposia. In addition, the IAEA itself may invite a limited number of scientists as invited speakers. Only participants designated or invited in this way are entitled to present papers and take part in the discussions.

Scientists interested in participating in any of the IAEA meetings should request information from the Government authorities of their own countries, in most cases the Ministry of Foreign Affairs or national atomic energy authority.

Representatives of the press, radio, television or other information media and members of the public, the latter as “observers”, may also be authorized to attend, but without the right to take part in the proceedings.

Working Language & Resolutions

Working Language: English. No simultaneous translation will be provided.

Resolutions: No resolutions may be submitted for consideration on any subject; no votes will be taken.

Side Events

All information concerning side events can be found at the [28th IAEA Fusion Energy Conference \(FEC 2020\) – Side Events site](#).

Information for Participants

The [IAEA FEC 2020 website](#) contains all information and useful links for the conference. In addition, the [local conference website](#) contains further information.

Presentation and Contribution Book

This book aggregates links to all contributions accepted at the conference, directing the reader to the appropriate Indico or IAEA Fusion Portal resource.

Contributed preprints and conference materials will be archived electronically at the [IAEA Fusion Portal](#). Links on the contribution pages direct the reader to the online synopsis, paper preprint, conference poster, and, where applicable, the resulting publication in the journal *Nuclear Fusion*.

The views expressed remain the responsibility of the named authors. No responsibility is held by the organizers for any material reproduced, or linked, in this book.

This book contains the author and affiliation information for all abstracts accepted by the FEC programme committee. Note that affiliations have been edited for style uniformity.

Overview of Contributions (as of May 6, 2021)

- 2 Keynote presentations
- 22 Overview talks with posters
- 103 Regular talks
- 36 Rapporteured papers
- 11 Overview poster presentations
- 526 Regular poster presentations
- 2 Post deadline talks
- 7 Post deadline poster presentations
- 5 Summary talks

Nuclear Fusion Journal

Participants have been invited to submit their paper for possible publication in the IAEA journal, *Nuclear Fusion*. If your institution does not have access to the journal, pdfs of these FEC derived articles can be requested from nf@iaea.org.

IAEA Publications

All IAEA publications may be ordered from the Sales and Promotion Unit,
International Atomic Energy Agency,
P.O. Box 100, A-1400 Vienna, Austria
Fax: +43 1 2600-29302
sales.publications@iaea.org
www.iaea.org/Publications/index.html

Contributions

The duration of oral presentations indicated in the programme does not already include discussion time. Speakers are requested to make videos for their talk of the duration noted below. At the end of each session, time for Q&A has been allocated. The Q&A part will be live and questions will be sent to the speakers and the session chair via the interactive chat system of the virtual conference platform. All oral presentations will also have an associated poster link in a poster session.

Overview presentations: 21 minutes

Regular oral presentations: 17 minutes

Rapporteur papers are identified by the letter “a” after the paper number. Rapporteur papers are identified by the letters “b”, “c”, or “d” after the paper number. A single paper may be rapporteured multiple times depending on context.

Overview posters (OVP), and poster versions of the Overview talks, will be available during the entire conference. OVP are associated with a 7 minute video produced by the main author.

Regular posters are associated with a 3 minute video produced by the main author will be first available at their scheduled session, remaining online thereafter.

In both cases, the videos will be requested for upload at the same time as the pdf document of the poster.

Explanation of Abbreviations

| | |
|-----------------|--|
| O | Opening |
| S | Summary |
| OV | Overview |
| OVP | Overview Posters |
| EX | Magnetic Fusion Experiments |
| TH | Magnetic Fusion Theory and Modelling |
| TECH | Fusion Energy Technology |
| IFE | Inertial Fusion Energy |
| IAC | Innovative and Alternative Fusion Concepts |
| PD | Post-Deadline Contributions |
| IAEA | <i>Agence internationale de l'énergie atomique (IAEA)</i> |
| F4E | EU-Fusion for Energy |
| IAE-OECD | International Energy Agency of the Organization for Economic Cooperation and Development |
| IAEA | International Atomic Energy Agency |
| ITER | International Fusion Energy Organisation |
| NEA-OECD | Nuclear Energy Agency of the Organization for Economic Cooperation and Development |

Virtual Conference

Organized by the International Atomic Energy Agency (IAEA), and supported by the Government of France through the French Alternative Energies and Atomic Energy Commission (CEA) and the ITER Organization (IO).

Due to the Covid situation, the conference will be held fully online.

| Day Date | Monday May 10, 2021 | Tuesday May 11, 2021 | Wednesday May 12, 2021 | Thursday May 13, 2021 | Friday May 14, 2021 | Saturday May 15, 2021 | | | | | |
|-----------------------------|---|--|---|--|---|---|---|---|--|---|---|
| 08:30 — 10:25 | <i>O/1</i> Opening —&— Keynote p. 9 | <i>EX/1-TH/1</i> H & CD & Steady-state & Operation p. 13 | <i>P1</i> Posters p. 14 | <i>IFE/1-IAC/1</i> Inertial Fusion & Innovative Concepts p. 26 | <i>P3</i> Posters p. 27 | <i>TH/4</i> Gyrokinetics: Energetic Particles, Magnetic Islands, Flux-Driven Turbulence p. 42 | <i>P5</i> Posters p. 43 | <i>EX/5-TH/6</i> Disruption p. 56 | <i>P7</i> Posters p. 58 | <i>TH/7</i> Disruptions, RF Modelling, and Stellarators p. 72 | |
| Coffee Break: 10:30 — 10:40 | | | | | | | | | | | |
| 10:40 — 12:35 | <i>OV/1</i> Overview: Magnetic Fusion p. 9 | <i>TH/2</i> RMP Suppression p. 13 | <i>P1</i> Posters p. 14 | <i>TH/3</i> Pedestal, Edge, SOL p. 26 | <i>P3</i> Posters p. 27 | <i>TH/5-EX/3</i> Transport & Confinement p. 42 | <i>P5</i> Posters p. 43 | <i>TECH/4</i> Material, PMI, and Neutron Source p. 57 | <i>P7</i> Posters p. 58 | <i>EX/8-PD/1</i> Energetic Particles & PD p. 73 | |
| Lunch: 12:35 — 14:00 | | | | | | | | | | | |
| 14:00 — 16:15 | <i>OV/2</i> Overview: Magnetic Fusion p. 10 | <i>OVP</i> Posters p. 11 | <i>OV/4</i> Overview: Magnetic Fusion p. 18 | <i>P2</i> Posters p. 20 | <i>TECH/2</i> DEMO & Advanced Tech. p. 34 | <i>P4</i> Posters p. 35 | <i>EX/4</i> MHD & ELM p. 49 | <i>P6</i> Posters p. 51 | <i>EX/6</i> Transport & Confinement p. 65 | <i>P8</i> Posters p. 67 | <i>S/1</i> Summary (14:00 – 16:00) p. 74 |
| Coffee Break | | | | | | | | | | | |
| 16:27 — 18:45 | <i>OV/3</i> Overview: Magnetic Fusion p. 10 | <i>OVP</i> Posters p. 11 | <i>TECH/1</i> ITER Technology p. 19 | <i>P2</i> Posters p. 20 | <i>EX/2</i> H-Mode & Pedestal p. 34 | <i>P4</i> Posters p. 35 | <i>TECH/3</i> Divertor & Heating p. 50 | <i>P6</i> Posters p. 51 | <i>EX/7</i> Divertor & SOL p. 66 | <i>P8</i> Posters p. 67 | <i>S/2</i> Summary (16:00 – 18:00) p. 74 |

O/1 Opening Plenary

Chair: Alain Bécoulet (ITER)

(08:30 – 10:00)

| | | | |
|-------|-------|---|--------|
| 08:30 | O/1-1 | R. Grossi Opening Address | IAEA |
| 08:40 | O/1-2 | K. Simson Welcome Address | EU |
| 08:45 | O/1-3 | B. Bigot Opening Address | ITER |
| 08:50 | O/1-4 | F. Jacq Opening Address | France |
| 08:55 | O/1-5 | N. Chaillet Welcome Address | France |
| 09:00 | O/1-6 | E. B. Johnson Welcome Address | USA |
| 09:05 | O/1-7 | J. Jacquinet Fusion in France | France |
| 09:25 | O/1-8 | M. Denecke Fusion Activities at the IAEA | IAEA |
| 09:45 | O/1-9 | Nuclear Fusion Journal Representative Nuclear Fusion Journal Prizes 2019–2020 | IAEA |

OV/1 Overview 1: Magnetic Fusion

Chair: Yuntao Song (P. R. China)

(10:45 – 12:40)

| | | | |
|-------|--------|--|--------------|
| 10:45 | OV/1-1 | B. Bigot Preparation for Assembly and Commissioning of ITER | ITER |
| 11:06 | OV/1-2 | J. Mailloux Overview of JET Results for Optimizing ITER Operation | UK |
| 11:27 | OV/1-3 | M. E. Fenstermacher DIII-D Research Advancing the Physics Basis for Optimizing the Tokamak Approach to Fusion Energy | USA |
| 11:48 | OV/1-4 | B. Wan Advances in the Long-Pulse Steady-State High- β H-Mode Scenario with Active Controls of Divertor Heat and Particle Fluxes on EAST | China, P. R. |

12:09 – 12:40: Discussion

OV/2**Overview 2: Magnetic Fusion**

Chair: Takashi Inoue (Japan)

(14:00 – 16:20)

- | | | | |
|---|--------|-----------------------|----------------|
| 14:00 | OV/2-1 | J. Bucalossi | France |
| Operating a Full Tungsten Actively Cooled Tokamak: Overview of WEST First Phase of Operation | | | |
| 14:21 | OV/2-2 | U. Stroth | Germany |
| Progress from ASDEX-Upgrade Experiments in Preparing the Physical Basis of ITER Operation and DEMO Scenario Development | | | |
| 14:42 | OV/2-3 | S.-W. Yoon | Korea, Rep. of |
| Overview of KSTAR | | | |
| 15:03 | OV/2-4 | Y. Kamada | Japan |
| Completion of JT-60SA Construction and Contribution to ITER | | | |
| 15:24 | OV/2-5 | G. M. Staebler | USA |
| Advances in Prediction of Tokamak Experiments with Theory-Based Models | | | |

*15:45 – 16:20: Discussion***OV/3****Overview 3: Magnetic Fusion**

Chair: Steve Cowley (USA)

(16:35 – 18:55)

- | | | | |
|--|--------|-----------------------|---------|
| 16:35 | OV/3-1 | P. Patel | USA |
| Progress in the U.S. Inertial Confinement Fusion Program | | | |
| 16:56 | OV/3-2 | T. S. Pedersen | Germany |
| Experimental Confirmation of Efficient Island Divertor Operation and Successful Neoclassical Transport Optimization in Wendelstein 7-X | | | |
| 17:17 | OV/3-3 | M. Osakabe | Japan |
| Recent Results of Deuterium Experiment on the Large Helical Device and its Contribution to the Fusion Reactor Development | | | |
| 17:38 | OV/3-4 | C. C. Hegna | USA |
| Improving the Stellarator Through Theoretical Understanding | | | |
| 17:59 | OV/3-5 | C. Hidalgo | Spain |
| Overview of the TJ-II Stellarator Research Programme towards Model Validation in Fusion Plasmas | | | |

18:20 – 18:55: Discussion

OVP Overview Posters (14:00 – 18:55)

| | | |
|--------|--|----------------|
| OV/1-1 | B. Bigot Preparation for Assembly and Commissioning of ITER | ITER |
| OV/1-2 | J. Mailloux Overview of JET Results for Optimizing ITER Operation | UK |
| OV/1-3 | M. E. Fenstermacher DIII-D Research Advancing the Physics Basis for Optimizing the Tokamak Approach to Fusion Energy | USA |
| OV/1-4 | B. Wan Advances in the Long-Pulse Steady-State High- β H-Mode Scenario with Active Controls of Divertor Heat and Particle Fluxes on EAST | China, P. R. |
| OV/2-1 | J. Bucalossi Operating a Full Tungsten Actively Cooled Tokamak: Overview of WEST First Phase of Operation | France |
| OV/2-2 | U. Stroth Progress from ASDEX-Upgrade Experiments in Preparing the Physical Basis of ITER Operation and DEMO Scenario Development | Germany |
| OV/2-3 | S.-W. Yoon Overview of KSTAR | Korea, Rep. of |
| OV/2-4 | Y. Kamada Completion of JT-60SA Construction and Contribution to ITER | Japan |
| OV/2-5 | G. M. Staebler Advances in Prediction of Tokamak Experiments with Theory-Based Models | USA |
| OV/3-1 | P. Patel Progress in the U.S. Inertial Confinement Fusion Program | USA |
| OV/3-2 | T. S. Pedersen Experimental Confirmation of Efficient Island Divertor Operation and Successful Neoclassical Transport Optimization in Wendelstein 7-X | Germany |
| OV/3-3 | M. Osakabe Recent Results of Deuterium Experiment on the Large Helical Device and its Contribution to the Fusion Reactor Development | Japan |
| OV/3-4 | C. C. Hegna Improving the Stellarator Through Theoretical Understanding | USA |
| OV/3-5 | C. Hidalgo Overview of the TJ-II Stellarator Research Programme towards Model Validation in Fusion Plasmas | Spain |
| OV/4-1 | A. Bhattacharjee Accelerating Magnetically Confined Fusion Through Advancements in Edge Turbulence Modelling and its Integration in a Whole Device Model | USA |
| OV/4-2 | H. Reimerdes Overview of the TCV Tokamak Experimental Programme | Switzerland |

Continued...

OVP *continued...*

| | | |
|----------|---|----------------|
| OV/4-3 | X. Duan Progress of HL-2A Experiment and HL-2M Program | China, P. R. |
| OV/4-4 | R. L. Tanna Overview of Recent Experimental Results from the ADITYA-U Tokamak | India |
| OV/4-5Ra | Y. Takase Overview of Coordinated Spherical Tokamak Research in Japan | Japan |
| OV/4-5Rb | W. Guttenfelder Recent NSTX-U Theory, Modelling and Analysis Results | USA |
| OV/4-5Rc | Y. Petrov Overview of Globus-M2 Spherical Tokamak Results at the Enhanced Values of Magnetic Field and Plasma Current | Russian Fed. |
| OV/4-5Rd | M. Gryaznevich Experiments on ST40 towards Burning Plasma Conditions | UK |
| OV/P-1 | M. Hron Overview of the COMPASS Results | Czech Republic |
| OV/P-2 | G. Pucella Overview of the FTU Results | Italy |
| OV/P-3 | M. Singh Fusion Technology Development to Ensure ITER Deliverables: Indian Experience | India |
| OV/P-4 | P. Rodriguez Fernandez Overview of the SPARC Physics Basis towards the Exploration of Burning-Plasma Regimes in High-Field, Compact Tokamaks | USA |
| OV/P-5 | T. Lan Recent Progress and Upgrade Plan of KTX Reversed Field Pinch | China, P. R. |
| OV/P-6 | N. Wang Advances in Physics and Applications of 3D Magnetic Perturbations on the J-TEXT Tokamak | China, P. R. |
| OV/P-7 | D. A. Yager-Elorriaga An Overview of Magneto-Inertial Fusion on the Z-Machine at Sandia National Laboratories | USA |
| OV/P-8 | M. Reinhart Latest Results of EUROfusion Plasma-Facing Components Research in the Areas of Power Loading, Material Erosion and Fuel Retention | Germany |
| OV/P-9 | R. Manchanda Physics Studies of ADITYA & ADITYA-U Tokamaks Plasmas using Spectroscopic Diagnostics | India |

EX/1-TH/1 H & CD & Steady-state & Operation

Chair: Yong-Su Na (Korea, Rep. of) (08:30 – 10:25)

| | | | |
|-------|---------|--|--------------|
| 08:30 | EX/1-1 | X. Chen Doubling the Efficiency of Off-Axis Current Drive using Reactor-Relevant ‘Top Launch ECCD’ on the DIII-D Tokamak | USA |
| 08:47 | EX/1-2 | J. Garcia Integrated Scenario Development at JET for DT Operation and ITER Risk Mitigation | France |
| 09:04 | EX/1-3R | S. Ding A Low Plasma Current (~8 MA) Approach for ITER’S $Q=10$ Goal | USA |
| 09:21 | TH/1-1 | E. Militello Asp Global JINTRAC Simulations for ITER PFPO Scenario Development | UK |
| 09:38 | EX/1-4 | X. Gong EAST Steady-State Long Pulse H-Mode with Core-Edge Integration for CFETR | China, P. R. |

09:55 – 10:25: Discussion

TH/2 Theory and Simulation of RMP Suppression

Chair: Matthew Hole (Australia) (10:40 – 12:35)

| | | | |
|-------|--------|---|----------------|
| 10:40 | TH/2-1 | Q. Hu Role of Resonant Magnetic Field Penetration in ELM Suppression and Density Pump-Out in DIII-D ITER-Like Plasmas | USA |
| 10:57 | TH/2-2 | D. Chandra A Nonlinear Simulation Study of the Effect of Toroidal Rotation on RMP Control of ELMs | India |
| 11:14 | TH/2-3 | T. Xia The Simulations on the Control of ELM and Edge Turbulence by RF Waves in EAST H-Mode Discharges | China, P. R. |
| 11:31 | TH/2-4 | S. Kim On Effect of $N=2$ RMP to Edge Pedestal in KSTAR with Nonlinear MHD Simulation | Korea, Rep. of |
| 11:48 | TH/2-5 | G. Hao Toroidal Modelling of Plasma Response to RMP Fields for HL-2M | China, P. R. |

12:05 – 12:35: Discussion

Tue

P1 Posters 1 **(08:30 – 12:30)**

| | | |
|----------|---|-----|
| EX/P1-1 | T. Abrams Advances in Understanding High-Z Sourcing, Migration, and Transport on DIII-D from L-Mode to High-Performance Regimes | USA |
| EX/P1-2 | B. Victor Global Stability of Elevated- q_{\min} , Steady-State Scenario Plasmas on DIII-D | USA |
| EX/P1-3 | S. Mordijck Impact of Opacity in Determining the Pedestal Density Structure on DIII-D and C-Mod | USA |
| EX/P1-4 | N. Logan Multimachine Scalings of Thresholds for $N=1$ and $N=2$ Error Field Correction | USA |
| EX/P1-5 | R. J. La Haye Disruptive Neoclassical Tearing Mode Seeding in DIII-D with Implications for ITER | USA |
| EX/P1-6 | J. Chen Internal Measurement of Magnetic Turbulence in the Pedestal of ELMy H-Mode DIII-D Plasmas | USA |
| EX/P1-7 | A. Pajares Integrated Control of Individual Scalars to Regulate Profiles and Improve MHD Stability in Tokamaks | USA |
| EX/P1-8 | A. M. Garofalo The Energy Confinement Evolution at Very High Edge Pedestal in Super H-Mode Experiments | USA |
| EX/P1-9 | M. Okabayashi Slowly Rotating 3D Field for Locked Mode Avoidance and H-Mode Recovery in DIII-D | USA |
| EX/P1-10 | B. Van Compernelle The High-Power Helicon Program at DIII-D: Gearing up for First Experiments | USA |
| EX/P1-11 | B. A. Grierson Testing the DIII-D Co/Counter Off-Axis Neutral Beam Injected Power and Ability to Balance Injected Torque | USA |
| EX/P1-12 | W. W. Heidbrink High-Energy Fast Ions Drive BAEs Unstable but not BAAEs | USA |
| EX/P1-13 | S. Haskey Main-Ion Thermal Transport in High Performance DIII-D Edge Transport Barriers | USA |
| EX/P1-14 | A. W. Leonard MHD Stability Constraints on Divertor Heat Flux Width in DIII-D | USA |
| EX/P1-15 | F. Effenberg Enhanced Divertor Power Exhaust Through Injection of Low-Z Powders in DIII-D | USA |

Continued...

P1 *continued...*

| | | |
|----------|--|-----|
| EX/P1-16 | R. Lunsford The Impact of Low-Z Powder Injection on Intrinsic Impurities in DIII-D | USA |
| EX/P1-17 | R. Wilcox Reduction of Peak ELM Energy Fluence with Pellet Triggering in Low Collisionality DIII-D Plasmas | USA |
| EX/P1-18 | C. Samuel Advancements in Understanding the 2D Role of Impurity Radiation for Dissipative Divertor Operation on DIII-D | USA |
| EX/P1-19 | Z. Yan Turbulence Flow Dynamics and Mode Structure Impacts on the L-H Transition | USA |
| EX/P1-20 | N. Crocker Novel Internal Measurements and Analysis of Ion Cyclotron Frequency Range Fast-Ion Driven Modes Advance Predictive Capability for Fast-Ion Transport in Burning Plasmas | USA |
| EX/P1-21 | M. Shafer Limits of RMP ELM Suppression in Double Null Plasmas | USA |
| EX/P1-22 | D. Eldon Divertor Detachment and Radiated Power Control Developments on DIII-D and EAST | USA |
| EX/P1-23 | S. Banerjee Effect of Pedestal Fluctuations on Inter-ELM Pedestal Recovery and ELM Characteristics in ECH Dominated Discharges in DIII-D | USA |
| EX/P1-24 | R. Churchill Accurate Disruption Prediction on the DIII-D Tokamak using Deep Learning with Raw, Multiscale Diagnostic Data | USA |
| EX/P1-25 | C. Rea Disruption Prevention via Interpretable Data-Driven Algorithms on DIII-D and EAST | USA |
| EX/P1-26 | C. C. Petty New Regime for High- β Hybrid using Off-Axis Electron Cyclotron Current Drive on DIII-D | USA |
| EX/P1-27 | D. Orlov Nonlinear MHD Modelling of Divertor Striations in DIII-D RMP ELM Suppressed Discharges | USA |
| EX/P1-28 | L. Casali Improved Impurity Retention and Pedestal Performance in DIII-D Closed Divertor | USA |
| EX/P1-29 | L. Schmitz Reducing the L-H Transition Power Threshold via Neoclassical Toroidal Viscosity, Edge Rotation Reversals, and Shape Changes | USA |
| EX/P1-30 | J. M. Park Off-Axis Neutral Beam Current Drive for Advanced Tokamak | USA |

Continued...

Tue

P1 *continued...*

| | | |
|----------|--|--------------|
| TH/P1-1 | Z. Qiu Nonlinear Saturation and Energetic Particle Transport by Toroidal Alfvén Eigenmodes | China, P. R. |
| TH/P1-2 | F. Zonca Theory and Simulation of Low-Frequency Drift Alfvén Waves in Toroidal Fusion Plasmas | Italy |
| TH/P1-3 | G. Vlad A Benchmark Between HYMAGYC, MEGA and ORB5 Codes using the NLED-AUG Testcase to Study Alfvénic Modes Driven by Energetic Particles | Italy |
| TH/P1-4 | K. C. Shaing Nonlinear Trapping in Wave-Particle Interactions in Tokamaks | USA |
| TH/P1-5 | S. Mazzi Numerical Study of the Impact of Fast Ions on TEM-Driven Turbulence | France |
| TH/P1-6 | H. Ferrari Trapped Particle Resonance Effects on the NTM Driven Losses of Energetic Particles | Argentina |
| TH/P1-8 | D. Spong Nonlinear Dynamics and Stability Surveys of Energetic Particle Instabilities | USA |
| TH/P1-9 | M. T. Beidler Spatially Dependent Simulations and Model Validation of Runaway Electron Dissipation via Impurity Injection in DIII-D and JET using KORC | USA |
| TH/P1-10 | R. Seki Hybrid Simulations of Fast Ion Transport and Losses due to the Fast Ion Driven Instabilities in the Large Helical Device | Japan |
| TH/P1-11 | N. Gorelenkov Self-Consistent Quasi-Linear Simulations of Fast Ion Relaxation in the Presence of Alfvénic Oscillations using the Resonance Broadened Quasi-Linear Code RBQ | USA |
| TH/P1-12 | W. Shen Hybrid Simulation of Fishbone Instabilities with Reversed Safety Factor Profile | China, P. R. |
| TH/P1-13 | R. White Alfvén Waves Misbehaving | USA |
| TH/P1-14 | T. Hayward-Schneider Global Gyrokinetic Simulations of TAEs in ITER and ASDEX-Upgrade | Germany |
| TH/P1-15 | Y. Peysson Effect of Partially Ionized High-Z Atoms on Fast Electron Dynamics in Tokamak Plasmas | France |

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| TH/P1-17 | M. Hoppe Polarized Synchrotron Radiation as a Tool for Studying Runaway Electrons | Sweden |
| TH/P1-18 | P. Rodrigues High-Order Coupling of Shear-Alfvén and Acoustic Continua in JET Plasmas | Portugal |
| TH/P1-19 | A. Bader Improving Energetic Particle Confinement in Stellarator Reactors | USA |
| TH/P1-20 | P. Lauber Energetic Particle Dynamics Induced by Off-Axis Neutral Beam Injection on ASDEX-Upgrade, JT-60SA and ITER | Germany |
| TH/P1-21 | D. Zarzoso Towards the Prediction and Quantification of Energetic Particle Transport and Losses in Fusion Plasmas | France |
| TH/P1-22 | A. Y. Dnestrovskiy Helium Ash Removal in DEMO-FNS | Russian Fed. |
| TH/P1-23 | J. Seo Nonlinear Evolution of High- <i>N</i> TAEs and Ion Heating via Ion Compton Scattering in ITER | Korea, Rep. of |
| TH/P1-24 | S. Dutta Numerical Simulation of RE Deconfinement Experiment using Local Magnetic Field Perturbation in ADITYA Tokamak | India |
| TH/P1-25 | K. Särkimäki Efficient and Rigorous Evaluation of Fast Particle Losses in Nonaxisymmetric Tokamak Plasmas | Sweden |
| TH/P1-26 | M. Podestà Extension of the Reduced Energetic Particle Transport 'Kick' Model to Low-Frequency Perturbations | USA |
| TH/P1-27 | E. Belova Validation of GAE Simulation and Theory for NSTX(-U) and DIII-D | USA |
| TH/P1-28 | F. Romanelli Progress in Understanding Alpha Channelling | Italy |
| TH/P1-30 | D. Del-Castillo-Negrete Generation and Mitigation of Runaway Electrons: Spatio-Temporal Effects in Dynamic Scenarios | USA |
| TH/P1-31 | R. Ma Theory of β -Induced Alfvén Eigenmode Excited by Energetic Electrons in Tokamak Plasmas | China, P. R. |

OV/4

Overview 4: Magnetic Fusion

Chair: Boris Kuteev (Russian Fed.)

(14:00 – 16:15)

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|-------|----------|--|--------------|
| 14:00 | OV/4-1 | A. Bhattacharjee Accelerating Magnetically Confined Fusion Through Advancements in Edge Turbulence Modelling and its Integration in a Whole Device Model | USA |
| 14:21 | OV/4-2 | H. Reimerdes Overview of the TCV Tokamak Experimental Programme | Switzerland |
| 14:42 | OV/4-3 | X. Duan Progress of HL-2A Experiment and HL-2M Program | China, P. R. |
| 15:03 | OV/4-4 | R. L. Tanna Overview of Recent Experimental Results from the ADITYA-U Tokamak | India |
| 15:24 | OV/4-5Ra | Y. Takase Overview of Coordinated Spherical Tokamak Research in Japan | Japan |
| | OV/4-5Rb | Recent NSTX-U Theory, Modelling and Analysis Results | |
| | OV/4-5Rc | Overview of Globus-M2 Spherical Tokamak Results at the Enhanced Values of Magnetic Field and Plasma Current | |
| | OV/4-5Rd | Experiments on ST40 towards Burning Plasma Conditions | |

15:45 – 16:15: Discussion

TECH/1 ITER Technology

Chair: Arun Chakraborty (ITER)

(16:30 – 18:45)

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|-------|------------|---|--------------|
| 16:30 | TECH/1-1 | M. Nakamoto Completion of the First ITER Toroidal Field Coil in Japan | Japan |
| 16:47 | TECH/1-2Ra | G. Serianni Status of the ITER Neutral Beam Test Facility and the First Beam Operations with the Full-Size Prototype Ion Source | Italy |
| | TECH/1-2Rb | Reliability of Electrodeposited Components for Fusion Application: A Process Evaluation of the First Kind | |
| 17:04 | TECH/1-3Ra | R. Ikeda Progress on Performance Tests of ITER-Gyrotrons and Design of Dual-Frequency Gyrotron for ITER Staged Operation Plan | Japan |
| | TECH/1-3Rb | New Developments in Russia of Gyrotrons for Plasma Fusion Installations | |
| 17:21 | TECH/1-4Ra | T. C. Luce Progress on the ITER DMS Design and Integration | ITER |
| | TECH/1-4Rb | Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER | |
| 17:38 | TECH/1-5 | J. Snipes ITER Plasma Control System Final Design and Preparation for First Plasma | ITER |
| 17:55 | TECH/1-6 | X. Wang Design Optimization and Safety Assessment of CN HCCB TBS | China, P. R. |

18:12 – 18:45: Discussion

Tue

P2 Posters 2

(14:00 – 18:45)

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| EX/1-1 | X. Chen Doubling the Efficiency of Off-Axis Current Drive using Reactor-Relevant ‘Top Launch ECCD’ on the DIII-D Tokamak | USA |
| EX/1-4 | X. Gong EAST Steady-State Long Pulse H-Mode with Core-Edge Integration for CFETR | China, P. R. |
| EX/2-1 | K. K. Barada New Understanding of Multiscale/Multifield Pedestal Turbulence, Transport, and Gradient Behavior During Type-I ELMs on the DIII-D Tokamak | USA |
| EX/2-6 | T. Wilks Development of an Integrated Core-Edge Scenario using the Super H-Mode | USA |
| EX/4-3 | J.-K. Park Quasi-Symmetric Error Field Correction in Tokamaks | USA |
| EX/4-4Ra | A. Loarte Integrated ELM and Divertor Flux Control using RMPs with Low Input Torque in EAST in Support of the ITER Research Plan | ITER |
| EX/4-4Rb | Y. Sun First Demonstration of Full ELM Suppression in Low Input Torque Plasmas for ITER using $N=4$ RMP in EAST | China, P. R. |
| EX/4-5Ra | Y. In Toward Holistic Understanding of the ITER-Like RMP ELM Control on KSTAR | Korea, Rep. of |
| EX/4-5Rb | J. Lee Edge Fluctuation Dynamics in RMP-Driven ELM Suppression and ELM-Free H-Mode Plasma in KSTAR | Korea, Rep. of |
| EX/4-6 | A. Diallo First Observation of ELM Suppression without Confinement Degradation due to Geodesic Acoustic Mode (GAM)-Like Mode Triggered by Boron Powder Injection | USA |
| EX/5-2Ra | D. Shiraki DIII-D and International Research towards Extrapolating Shattered Pellet Injection Performance to ITER | USA |
| EX/5-2Rb | C. Paz-Soldan A Novel Path to Runaway Electron Mitigation via Deuterium Injection and Current-Driven Kink Instability | USA |
| EX/5-3Ra | J. Kim Disruption Mitigation by Symmetric Dual Injection of Shattered Pellets in KSTAR | Korea, Rep. of |
| EX/5-4 | J. Barr Development and Experimental Qualification of Novel Disruption Prevention Techniques on DIII-D | USA |

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| EX/6-6Ra | A. Marinoni Diverted Negative Triangularity Plasmas on DIII-D: The Benefit of High Confinement without the Liability of an Edge Pedestal | USA |
| EX/7-1 | L. Wang Achievements of Actively Controlled Divertor Detachment Compatible with Sustained High Confinement Core in DIII-D and EAST | China, P. R. |
| EX/7-6 | H. Wang Synergy Between Divertor Geometry and Drifts on Divertor Power Dissipation in the DIII-D Small Angle Slot Divertor | USA |
| EX/8-2 | C. Collins Improving Fast-Ion Confinement and Performance by Reducing Alfvén Eigenmodes in the $q_{min} > 2$, Steady-State Scenario | USA |
| TH/1-1 | E. Militello Asp Global JINTRAC Simulations for ITER PFPO Scenario Development | UK |
| TH/4-1 | A. Di Siena Turbulence Suppression due to Energetic Particles: From First Principles to Gyrokinetic Simulations and Experimental Observations | Germany |
| TH/4-2 | A. Ishizawa Interaction Between Energetic-Particle-Driven MHD Mode and Drift-Wave Turbulence Based on Global Gyrokinetic Simulation | Japan |
| TH/5-2 | J. Citrin Predict First: Flux-Driven Multichannel Integrated Modelling over Multiple Confinement Times with the Gyrokinetic Turbulent Transport Model QUALIKIZ | Netherlands |
| TH/7-2 | S. Shiraiwa Towards Integrated RF Actuator Modelling: Whole Device Scale RF Full-Wave Simulation Including Hot Core and 3D SOL/Antenna Regions | USA |
| EX/P2-1 | G. Xu ELM Suppression Sustained by $N=1$ Radiation-Belt Oscillations near the X-Point Excited by Divertor Impurity Seeding in EAST | China, P. R. |
| EX/P2-2 | X. Zou Evidence of ITG/TEM Turbulence Transition Causing Edge Temperature Ring Oscillation for Sustaining Stationary I-Mode Plasmas | France |
| EX/P2-3 | B. Zhang H-Mode Operation in He Plasmas with Pure RF-Heating and ITER-Like Tungsten Divertor on EAST | China, P. R. |
| EX/P2-4 | D. Moreau Model-Predictive Kinetic Control Experiments on EAST | France |

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P2 *continued...*

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| EX/P2-5 | J. Qian Development of Quiescent H-Mode Scenario with ITER-Like Tungsten Divertor in EAST | China, P. R. |
| EX/P2-7 | L. Zeng Operation in the Quiescent Regime with a High Runaway Electron Current Fraction on the EAST Tokamak | China, P. R. |
| EX/P2-8 | E. Schuster Development and Implementation of Integrated Q -Profile+ β_N Feedback Control Strategies for Access to Advanced Scenarios in EAST | USA |
| EX/P2-9 | M. Xu Experimental Investigation of the Excitation of Alfvén Eigenmodes and the Confinement of Energetic Ions During Sawteeth-Like Oscillation in EAST | China, P. R. |
| EX/P2-10 | D. Zhu In-Situ Leading Edge Induced Thermal Damages of Melting and Cracking on ITER-Like W/Cu Mono-Blocks During Long Pulse Operations in EAST | China, P. R. |
| EX/P2-11 | R. Ding Plasma-Wall Interactions During the Helium Plasma Operation in EAST with a Tungsten Divertor | China, P. R. |
| EX/P2-12 | H. Liu Study of ITB Formation and Sustainment with Optimized Current Profiles in the High-Performance Steady State Plasma on EAST | China, P. R. |
| EX/P2-13 | K. Gan The Electron-Ion Side Asymmetry on Striated Heat Flux Induced by Lower Hybrid Wave Absorption in the SOL on the EAST | USA |
| EX/P2-14 | C. Li In-Situ Study of Fuel Retention by Laser-Induced Breakdown Spectroscopy on the First Wall under Long-Pulse Operation of Experimental Advanced Superconducting Tokamak | China, P. R. |
| EX/P2-15 | S. G. Lee Generation Mechanism and Characteristics of Intrinsic Rotation in KSTAR | Korea, Rep. of |
| EX/P2-16 | K. Kim Improved Energy Confinement Triggered by Nonaxisymmetric Magnetic Field Driven Rotation Braking in KSTAR | Korea, Rep. of |
| EX/P2-17 | Y. Jiang Kinetic Equilibrium Reconstruction and Stability Analysis of KSTAR Plasmas Supporting Disruption Event Characterization and Forecasting | USA |
| EX/P2-18 | Y.-S. Park Stability of Neoclassical Tearing Modes and their Active Stabilization in KSTAR | USA |

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| EX/P2-19 | S. Sabbagh Tokamak Disruption Event Characterization and Forecasting Research and Expansion to Real-Time Application | USA |
| EX/P2-20 | L. Colas The Geometry of ICRF-Induced Wave-SOL Interaction: A Multimachine Experimental Review in View of ITER Operation | France |
| EX/P2-21 | Y. In Exploration of RMP ELM Control on ITER Similar Shape (ISS) in KSTAR | Korea, Rep. of |
| EX/P2-22 | J. Kim Active Control of Toroidal Alfvén Eigenmodes using the Electron Cyclotron Waves in KSTAR High-Performance Discharges | Korea, Rep. of |
| EX/P2-23 | G. Yun Resolving the Dispersion of Plasma Waves by Measuring the Modulation of Electron Cyclotron Emissions | Korea, Rep. of |
| EX/P2-24 | H.-S. Kim Recent Process in KSTAR Long Pulse Operation | Korea, Rep. of |
| EX/P2-25 | J. Chung Sustainable Internal Transport Barrier Discharges in KSTAR | Korea, Rep. of |
| EX/P2-26 | J. Lee Machine Learning Approach to Understand the Causality Between Solitary Perturbation and Edge Confinement Collapse in the KSTAR Tokamak | Korea, Rep. of |
| EX/P2-27 | H. Shin Local Density Profiles of Impurities in KSTAR and WEST Plasmas by Spectroscopic Diagnostics and Forward Modelling | Korea, Rep. of |
| EX/P2-28 | J. Hwang Experiment and Modelling of Divertor Detachment with Deuterium Injection in KSTAR H-Mode Plasmas | Korea, Rep. of |
| EX/P2-30 | Y.-S. Na Hybrid Scenarios in KSTAR: Experimental Approach and Physics Understanding | Korea, Rep. of |
| EX/P2-34 | P. K. Sharma Current Drive Experiments in SST1 Tokamak with Lower Hybrid Waves | India |
| TH/P2-1 | D. Borodin Fluid, Kinetic and Hybrid Approaches for Edge Transport Modelling in Fusion Devices | Germany |
| TH/P2-2 | E. Gusakov Possible Ways to Suppress Anomalous Absorption at ECRH | Russian Fed. |
| TH/P2-3 | H.-T. Kim Verification and Validation of Plasma Burn-Through Simulations in Preparation for ITER First Plasma | UK |

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| TH/P2-4 | Ž. Štancar Experimental Validation of an Integrated Modelling Approach to Neutron Emission Studies at JET | Slovenia |
| TH/P2-5 | M. Honda Development of a Novel Integrated Model GOTRESS+ for Predictions and Assessment of JT-60SA Operation Scenarios Including the Pedestal | Japan |
| TH/P2-6 | V. Graber Nonlinear Burn Control of ITER'S Two-Temperature Plasmas using Optimal and Adaptive Allocation of Actuators with Uncertain Dynamics | USA |
| TH/P2-7 | K. Yanagihara Quasi-optical Propagation and Absorption of Electron Cyclotron Waves from Both Numerical and Experimental Point of View | Japan |
| TH/P2-8 | A. Polevoi Assessment of Neutron Production During Prefusion Operation of ITER | ITER |
| TH/P2-9 | P. Sirén Extrapolation to JET-DT Plasmas using a Combination of Empirical Scaling and the ASCOT Neutral Beam Heating Code | Finland |
| TH/P2-10 | L. Xue Integrated Analysis of High-Performance Scenarios for the Favorable Vertical Stability Plasma of HL-2M | China, P. R. |
| TH/P2-12 | U. Maurya Burning Plasma Transport Simulation for Axisymmetric Tokamaks with Alpha-Particle Heating | India |
| TH/P2-13 | F. M. Poli Towards a Disruption-Free Plasma: Challenges in Designing a Robust Plasma Termination Phase for ITER | USA |
| TH/P2-14 | A. Ram Propagation of Radio Frequency Waves Through Turbulent Plasmas | USA |
| TH/P2-15 | G. Tardini Towards Fully-Predictive Transport Modelling in ASDEX-Upgrade H-Modes | Germany |
| TH/P2-16 | N. Bertelli 3D Full-Wave Fast-Wave Modelling with Realistic HHFW Antenna Geometry and SOL Plasma in NSTX-U | USA |
| TH/P2-17 | J. Chen Scenario Development and Exploration of Operating Space for CFETR Plasma | China, P. R. |
| TH/P2-18 | E. Fable A Full-Discharge Tokamak Flight Simulator | Germany |

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| TH/P2-19 | S. Dettrick Simulation of Equilibrium, Stability, and Transport in Advanced FRCS | USA |
| TH/P2-20 | M. Romanelli Predictive Multiphysics Integrated Modelling of Tokamak Scenarios using the ITER Integrated Modelling and Analysis Suite (IMAS) in Support of ITER Exploitation | UK |
| TH/P2-21 | P. Manas Tungsten Transport in Tokamaks: Towards Real-Time Kinetic-Theory-Based Plasma Performance Optimization | France |
| TH/P2-22 | S. Pinches Integrated Modelling & Analysis Suite: Developments to Address ITER Needs | ITER |
| TH/P2-23 | M. Marin First-Principle-Based Integrated Modelling of Multiple Isotope Pellet Cycles at JET | Netherlands |
| TH/P2-24 | M. M. Alam Relativistic Electrons' Orbit Trajectory Calculation and Calculation Study Analysis in Electron Cyclotron Heating and Current Drive of Tokamak Plasmas | Bangladesh |
| TH/P2-25 | T. Rafiq Self-Consistent Predictive Core-Pedestal ITER Scenario Modelling | USA |
| TH/P2-26 | P. Mantica First-Principle Based Multichannel Integrated Modelling in Support to the Design of the Divertor Tokamak Test Facility | Italy |
| TH/P2-27 | G. Zadvitskiy NBI Heating Modelling for Compass-Upgrade Tokamak using NUBEAM Code | Czech Republic |

IFE/1-IAC/1 Inertial Fusion and Innovative Concepts

Chair: Sylvie Jacquemot (EU)

(08:30 – 10:25)

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|-------|---------|---|-------|
| 08:30 | IFE/1-1 | R. Kodama Fast Ignition Laser Fusion Energy Research in Japan | Japan |
| 08:47 | IFE/1-2 | Y. Ping Tripling the Energy Coupling Efficiency from Hohlräum to Capsule on NIF | USA |
| 09:04 | IFE/1-3 | J. Kawanaka Core Key Technologies of Multi-Kilojoule Repeatable Laser System | Japan |
| 09:21 | IFE/1-4 | A. Zylstra Improving Implosion Energy Coupling at the NIF | USA |
| 09:38 | IAC/1-1 | H. Gota Overview of C-2W: High Temperature, Steady-State Beam-Driven Field-Reversed Configuration Plasmas | USA |

*09:55 – 10:25: Discussion***TH/3 Pedestal, Edge, SOL**

Chair: David Hatch (USA)

(10:40 – 12:35)

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|-------|--------|--|--------------|
| 10:40 | TH/3-1 | R. Hager Gyrokinetic Simulation in Realistic Divertor Geometry Reproduces Density Pump-Out and Enhanced Electron Heat Confinement in Tokamak Edge Plasma under Resonant Magnetic Perturbations | USA |
| 10:57 | TH/3-2 | W. Zholobenko Simulations of Turbulence, its Suppression and Profile Evolution across the Edge and Scrape-Off Layer of the ASDEX-Upgrade Tokamak | Germany |
| 11:14 | TH/3-3 | M. Hölzl Simulations of Edge Localized Mode (ELM) Cycles and ELM Control | Germany |
| 11:31 | TH/3-4 | A. Hakim First Nonlinear Full- f Electromagnetic Gyrokinetic Continuum Simulations of Turbulence in Tokamak Scrape-Off Layer and Pedestal | USA |
| 11:48 | TH/3-5 | V. Rozhansky Multimachine SOLPS-ITER Comparison of Impurity Seeded H-Mode Radiative Divertor Regimes with Metal Walls | Russian Fed. |

12:05 – 12:35: Discussion

P3 Posters 3

(08:30 – 12:30)

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|------------|---|--------------|
| EX/1-2 | J. Garcia Integrated Scenario Development at JET for DT Operation and ITER Risk Mitigation | France |
| EX/2-2 | L. Frassinetti Role of the Separatrix Density in the Pedestal Performance in JET-ILW and JET-C | Sweden |
| EX/2-3 | E. R. Solano L-H Transition Studies at JET: H, D, He and T | Spain |
| EX/3-1 | A. Mariani Experimental Investigation and Gyrokinetic Simulations of Multiscale Electron Heat Transport in JET, AUG and TCV | Italy |
| EX/3-2 | E. de la Luna Exploring the Physics of a High-Performance H-Mode with Small ELMs and Zero Gas Puffing in JET-ILW | Spain |
| EX/4-2 | M. Jiang Influence of Large Magnetic Island Structures on Turbulence and Quasi-Coherent Modes in Tokamak Plasmas | China, P. R. |
| EX/5-1Ra | S. Jachmich Shattered Pellet Injection Experiments at JET in Support of the ITER Disruption Mitigation System Design | ITER |
| EX/6-1 | C. Maggi Isotope Identity Experiments in JET with ITER-Like Wall | UK |
| EX/8-1 | R. Dumont Scenario Preparation for the Observation of Alpha-Driven Instabilities and Transport of Alpha Particles in JET DT Plasmas | France |
| TECH/1-1 | M. Nakamoto Completion of the First ITER Toroidal Field Coil in Japan | Japan |
| TECH/1-2Ra | G. Serianni Status of the ITER Neutral Beam Test Facility and the First Beam Operations with the Full-Size Prototype Ion Source | Italy |
| TECH/1-2Rb | J. Joshi Reliability of Electrodeposited Components for Fusion Application: A Process Evaluation of the First Kind | India |
| TECH/1-3Ra | R. Ikeda Progress on Performance Tests of ITER-Gyrotrons and Design of Dual-Frequency Gyrotron for ITER Staged Operation Plan | Japan |
| TECH/1-3Rb | G. Denisov New Developments in Russia of Gyrotrons for Plasma Fusion Installations | Russian Fed. |
| TECH/1-4Ra | T. C. Luce Progress on the ITER DMS Design and Integration | ITER |

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| TECH/1-4Rb | L. R. Baylor Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER | USA |
| TECH/1-5 | J. Snipes ITER Plasma Control System Final Design and Preparation for First Plasma | ITER |
| TECH/1-6 | X. Wang Design Optimization and Safety Assessment of CN HCCB TBS | China, P. R. |
| TH/2-1 | R. Nazikian Role of Resonant Magnetic Field Penetration in ELM Suppression and Density Pump-Out in DIII-D ITER-Like Plasmas | USA |
| TH/6-1 | E. Nardon Theory and Modelling Activities in Support of the ITER Disruption Mitigation System | France |
| TH/7-1Ra | W. Tang Implementation of Artificial Intelligence (AI)/Deep Learning Disruption Predictor into a Plasma Control System | USA |
| TH/7-1Rb | I. Bandyopadhyay A Machine Learning Approach for Data Visualization and Parameter Selection for Efficient Disruption Prediction in Tokamaks | India |
| TH/7-1Rc | Z. Yang In-Depth Research on the Interpretable Disruption Predictor in HL-2A | China, P. R. |
| TH/7-5 | M. Sato Supercritical Stability of the Large Helical Device Plasmas due to the Kinetic Thermal Ion Effects | Japan |
| EX/P3-1 | M. Iliasova Gamma-Ray Spectrometry for Confined Fast Ion Studies in D ³ He Plasma Experiments on JET | Russian Fed. |
| EX/P3-2 | T. Tala Comparison of Particle Transport and Confinement Properties Between the ICRH and NBI Heated Dimensionless Identity Plasmas on JET | Finland |
| EX/P3-4 | M. Valovic Control of H/D Isotope Mix by Peripheral Pellets in H-Mode Plasma in JET | UK |
| EX/P3-6 | M. Porkolab Experimental and Computational Investigations of Alfvén Eigenmode Stability in JET Plasmas Through Active Antenna Excitation | USA |
| EX/P3-7 | U. Sheikh Disruption Thermal Load Mitigation with JET SPI | Switzerland |
| EX/P3-8 | H. Weisen Analysis of the Inter-Species Power Balance in JET Plasmas | Switzerland |

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| EX/P3-9 | C. Giroud High Performance ITER-Baseline Discharges in Deuterium with Nitrogen and Neon-Seeding in the JET-ILW | UK |
| EX/P3-10 | C. Sozzi Termination of Discharges in High Performance Scenarios in JET | Italy |
| EX/P3-11 | M. J. Mantinen Recent Key Contributions of ICRF Heating in Support of Plasma Scenario Development and Fast Ion Studies on JET and ASDEX-Upgrade | Spain |
| EX/P3-13 | H. Sun Understanding the Role of Edge Plasma Physics in the H-Mode Density Limit on the JET-ILW | UK |
| EX/P3-14 | N. Vianello SOL Profile and Fluctuations in Different Divertor Recycling Conditions in H-Mode Plasmas | Italy |
| EX/P3-17 | M. Nocente Facets of Alpha Particle Physics Anticipated in D- ³ He Plasmas in Preparation for Deuterium-Tritium at the Joint European Torus | Italy |
| EX/P3-18 | M. F. F. Nave Intrinsic Rotation Reversals of JET and DIII-D Plasmas in Deuterium and Hydrogen | Portugal |
| EX/P3-19 | P. Shi Frequency Slowly-Sweeping Alfvénic Modes on the HL-2A Tokamak | China, P. R. |
| EX/P3-20 | W. Zhong Enhanced Confinement and Thermal Transport Decoupling in H-Mode Plasmas with Impurity Seeding | China, P. R. |
| EX/P3-21 | W. Chen High- β_N Experiments and Corresponding MHD Activities in the HL-2A Tokamak | China, P. R. |
| EX/P3-22 | L. Yu Experimental Evidence of Nonlinear Avalanche Dynamics of Energetic Particle Modes | China, P. R. |
| EX/P3-23 | Y. Liu Edge Coherent Mode Providing Continuous Transport During ELM Mitigation with $N=1$ RMP in HL-2A H-Mode Plasma | China, P. R. |
| EX/P3-24 | D. Li Combined Effects of Turbulence, MHD Activity and Sawtooth Crashes on Particle Transport in L-Mode Discharges on HL-2A Tokamak | China, P. R. |
| EX/P3-25 | T. Long Comparative Study of Phase Dynamics in Reynolds Stress and Particle Flux in the Edge Turbulence of HL-2A Tokamak | China, P. R. |

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| EX/P3-26 | N. Wu The Mechanism Research of Double Strike Points of the Divertor Particle Flux in HL-2A ECRH Plasmas | China, P. R. |
| EX/P3-27 | N. Zhang ELM Suppression and Flow Damping with $N=1$ RMP Fields in Tokamaks Plasmas | China, P. R. |
| EX/P3-28 | G. Xiao Dual Effects of the Impurity Seeding by LBO on the Pedestal Instabilities | China, P. R. |
| EX/P3-29 | Y. Zhang Effects of LHCD and LBO on Runaway Electron Dynamics During Disruptions in the HL-2A Tokamak | China, P. R. |
| EX/P3-30 | J. Wen Effect of ECRH and LHW on Pedestal Instabilities in Type-I ELMy H-Mode of the HL-2A Tokamak | China, P. R. |
| EX/P3-31 | L. Zang Analysis of Nonlinear Mode-Mode Interaction using Hilbert Transform on HL-2A | China, P. R. |
| EX/P3-32 | M. Komm Power Exhaust by Core Radiation at the Compass Tokamak | Czech Republic |
| EX/P3-33 | J. H. Severo Plasma Rotation Studies Carried Out in the TCABR Tokamak and its Comparison with Neoclassic Theory | Brazil |
| TECH/P3-1 | T. Gebhart Recent Progress in Shattered Pellet Injection Technology in Support of the ITER Disruption Mitigation System | USA |
| TECH/P3-10 | P. Chaudhuri Status of the Design Optimization, Analysis and R&D Activities of Indian HCSB Blanket Program | India |
| TECH/P3-11 | L. Zani JT-60SA TF Coils Steady-State Regime: Acceptance Tests Modelling with CEA Simulation Codes and First Extrapolations to Tokamak Operation | France |
| TECH/P3-12 | G. Matsunaga Achievement of Precise Assembly of the JT-60SA Superconducting Tokamak | Japan |
| TECH/P3-13 | K. Shimada Power Supply Commissioning to Achieve DC Power Control for Superconducting Coils in JT-60SA | Japan |
| TECH/P3-14 | K. Hamada Commissioning of JT-60SA Cryogenic System with Active Control to Mitigate Heat Load Fluctuation | Japan |

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P3 *continued...*

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| TECH/P3-15 | Y. Shibama Development of the Thermal Insulation Devices for the JT-60SA Tokamak | Japan |
| TECH/P3-16 | P. Khvostenko Tokamak T-15MD: Preparing for Physical Start-Up | Russian Fed. |
| TECH/P3-17 | S. P. Gerhardt NSTX-U Recovery Project Progress towards First Plasma | USA |
| TECH/P3-18 | V. L. Tanna Cryogenics System Performance Enhancement and Attempt towards Shaped Plasma Operation in SST-1 | India |
| TECH/P3-19 | T. Brown Advancement of the PPPL Straight Leg Quasi-Axisymmetric Stellarator (QAS) Design | USA |
| TECH/P3-2 | J. Chen The Development of the ITER Enhanced Heat Flux First Wall Panels with Mechanically Attached Plasma Facing Finger Units | China, P. R. |
| TECH/P3-20 | A. Shimizu Recent Development of Engineering Design for Quasi-Axisymmetric Stellarator CFQS | Japan |
| TECH/P3-21 | D. Gates Stellarator Simplification with Permanent Magnets | USA |
| TECH/P3-22 | C. Zhu Towards Simpler Coils for Optimized Stellarators | USA |
| TECH/P3-23 | R. Majeski Confinement Studies with Low Recycling Walls in LTX- β | USA |
| TECH/P3-3 | J. Wu The Design of an ITER EHF First Wall Panel with Mechanically Attached Plasma-Facing Fingers | China, P. R. |
| TECH/P3-4 | H. Tobar Completion of Assembly and High-Voltage Insulation Test of DC 1 MV Power Supply System for the ITER Neutral Beam Test Facility | Japan |
| TECH/P3-6 | A. Burdak Integration of ITER Diagnostic Ports in BINP | Russian Fed. |
| TECH/P3-7 | A. Bader Progress in Physics and System Integration of ITER Core X Ray Crystal Spectrometer | Jordan |
| TECH/P3-8 | D. Aquaro Large Scale Experimental Facility for Assessment the Performances of the Vacuum Vessel Pressure Suppression System of ITER | Italy |
| TECH/P3-9 | L. Bühler MHD Velocity Distribution and Pressure Drop in Manifolds of a WCLL TBM | Germany |
| TH/P3-1 | C. Smiet The Alternating-Hyperbolic Sawtooth | USA |

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P3 *continued...*

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| TH/P3-2 | N. Aiba Stabilization of Kink/Peeling Modes by Coupled Rotation and Ion Diamagnetic Drift Effects in QH-Mode Plasmas in DIII-D and JT-60U | Japan |
| TH/P3-3 | K. Ichiguchi Nonresonant Global Mode in LHD Partial Collapse with Net Toroidal Current | Japan |
| TH/P3-4 | V. Pustovitov Models and Scalings for the Disruption Forces in Large Tokamaks | Russian Fed. |
| TH/P3-5 | B. Coppi Novel Tridimensional Processes in Fusion Burning Plasmas and Gained Innovative Perspectives | USA |
| TH/P3-6 | V. Yanovski Global Forces on Tokamak Wall During Disruptions | Czech Republic |
| TH/P3-9 | V. Sergeev Disruption Mitigation in Tokamak Reactor via Reducing the Seed Electrons of Avalanche | Russian Fed. |
| TH/P3-11 | B.-H. Park A Physics Model of the Rotating Halo Current During VDE Disruption | Korea, Rep. of |
| TH/P3-12 | A. Matsuyama Requirements for Runaway Electron Avoidance in ITER Disruption Mitigation Scenario by Shattered Pellet Injection | Japan |
| TH/P3-13 | J. Huang 3D Nonlinear Modelling of Resonant Magnetic Perturbation on EAST | Japan |
| TH/P3-14 | S. C. Jardin Vessel Forces from a Vertical Displacement Event in ITER | USA |
| TH/P3-16 | C. C. Kim Simulations and Validation of Disruption Mitigation and Projections to ITER'S Disruption Mitigation System | USA |
| TH/P3-17 | A. Reiman Disruption Avoidance via RF Current Condensation in Magnetic Islands | USA |
| TH/P3-18 | A. Snicker The Transport of NTM-Controlling EC Wave due to Density Fluctuations in European DEMO | Finland |
| TH/P3-19 | K. Aleynikova Taylor Relaxation in Wendelstein 7-X | Germany |
| TH/P3-20 | D. Weisberg Passive Deconfinement of Runaway Electrons using an In-Vessel Helical Coil | USA |
| TH/P3-21 | P. Aleynikov Energy Balance During Pellet Assimilation | Germany |

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P3 *continued...*

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| TH/P3-22 | M. D. J. Cole Global Gyrokinetic Simulation of Turbulence in Optimized Stellarators | USA |
| TH/P3-23 | B. Breizman Pellet Ablation Physics Studies for Disruption Mitigation | USA |
| TH/P3-24 | M. Bécoulet Nonlinear MHD Modelling of Edge Localized Modes Suppression by Resonant Magnetic Perturbations in ITER | France |
| TH/P3-25 | Z. Gao Theory of Quasi-Mode Parametric Decay in Plasmas | China, P. R. |
| TH/P3-26 | H. Cai Excitation of β -Induced Alfvén Eigenmodes by Magnetic Island | China, P. R. |

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TECH/2**DEMO & Advance Technology**

Chair: Susana Clement-Lorenzo (EU)

(14:00 – 16:12)

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|-------|------------|--|--------------|
| 14:00 | TECH/2-1 | Y. Someya Progress in Design and Engineering Issues on JA DEMO | Japan |
| 14:17 | TECH/2-2 | O. Crofts Maintenance of a Fusion Power Plant: The EU Approach | UK |
| 14:34 | TECH/2-3Ra | J. Morris Preparing the Systems Code Process for EU-DEMO Conceptual Design | UK |
| | TECH/2-3Rb | MIRA: A Multiphysics Approach to Designing a Fusion Power Plant | |
| 14:51 | TECH/2-4 | J. Menard Mission and Configuration Studies for A U.S. Sustained High-Power Density Tokamak Facility | USA |
| 15:08 | TECH/2-5 | S. Deshpande Role of Core Radiation Losses from Plasma and its Impact on ST Reactor Design Parameter Choices | India |
| 15:25 | TECH/2-6 | A. Molodyk Advanced Second Generation High Temperature Superconductor Wire for Fusion | Russian Fed. |

*15:42 – 16:12: Discussion***EX/2****H-Mode & Pedestal**

Chair: Jerry Hughes (USA)

(16:27 – 18:45)

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|-------|--------|--|---------|
| 16:27 | EX/2-1 | K. K. Barada New Understanding of Multiscale/Multifield Pedestal Turbulence, Transport, and Gradient Behavior During Type-I ELMs on the DIII-D Tokamak | USA |
| 16:44 | EX/2-2 | L. Frassinetti Role of the Separatrix Density in the Pedestal Performance in JET-ILW and JET-C | Sweden |
| 17:01 | EX/2-3 | E. R. Solano L-H Transition Studies at JET: H, D, He and T | Spain |
| 17:18 | EX/2-4 | M. Kobayashi RMP Induced H-Mode Transition During Divertor Detachment with Enhanced Edge Radiation in Deuterium Plasmas in LHD | Japan |
| 17:35 | EX/2-5 | A. Kallenbach Developments towards an ELM-Free DEMO Pedestal Radiative Cooling Scenario in ASDEX-Upgrade | Germany |
| 17:52 | EX/2-6 | T. Wilks Development of an Integrated Core-Edge Scenario using the Super H-Mode | USA |

18:09 – 18:45: Discussion

P4 Posters 4

(14:00 – 18:45)

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| EX/4-1 | A. Burckhart Experimental Evidence of Magnetic Flux Pumping at ASDEX-Upgrade | Germany |
| EX/6-5 | A. Melnikov Evolution of the Electric Potential and Turbulence in OH and ECRH Low-Density Plasmas in the T-10 Tokamak | Russian Fed. |
| EX/6-6Rb | L. Porte The Route to High Performance, DEMO Relevant, Negative Triangularity Tokamak Operation on TCV | Switzerland |
| EX/7-2 | S. Henderson Experimental Impurity Concentrations Required to Reach Detachment in AUG and JET | UK |
| EX/7-3 | M. Bernert Control of the X-Point Radiator in Fully-Detached ASDEX-Upgrade H-Mode Plasmas | Germany |
| EX/7-5 | C. Theiler Advances in Understanding Power Exhaust Physics with the New, Baffled TCV Divertor | Switzerland |
| IAC/1-1 | H. Gota Overview of C-2W: High Temperature, Steady-State Beam-Driven Field-Reversed Configuration Plasmas | USA |
| IFE/1-1 | R. Kodama Fast Ignition Laser Fusion Energy Research in Japan | Japan |
| IFE/1-2 | Y. Ping Tripling the Energy Coupling Efficiency from Hohlräum to Capsule on NIF | USA |
| IFE/1-3 | J. Kawanaka Core Key Technologies of Multi-Kilojoule Repeatable Laser System | Japan |
| IFE/1-4 | A. Zylstra Improving Implosion Energy Coupling at the NIF | USA |
| TH/3-2 | W. Zholobenko Simulations of Turbulence, its Suppression and Profile Evolution across the Edge and Scrape-Off Layer of the ASDEX-Upgrade Tokamak | Germany |
| TH/3-3 | M. Hölzl Simulations of Edge Localized Mode (ELM) Cycles and ELM Control | Germany |
| TH/3-5 | V. Rozhansky Multimachine SOLPS-ITER Comparison of Impurity Seeded H-Mode Radiative Divertor Regimes with Metal Walls | Russian Fed. |
| TH/7-3 | J. Coburn Energy Deposition and Melt Deformation on the ITER First Wall due to Disruptions and Vertical Displacement Events | ITER |

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| EX/P4-1 | A. Shevelev Study of Runaway Electron Dynamics at the ASDEX-Upgrade Tokamak During Impurity Injection using Fast Gamma-Ray Spectrometry | Russian Fed. |
| EX/P4-2 | A. Hakola Gross and Net Erosion Balance of Plasma-Facing Components in Full-W Tokamaks | Finland |
| EX/P4-6 | P. A. Schneider The Dependence of Confinement on the Isotope Mass in the Core and the Edge of AUG and JET H-Mode Plasmas | Germany |
| EX/P4-8 | Y. Kazakov Recent Applications of 3-Ion ICRF Schemes on ASDEX-Upgrade and JET in Support of ITER | Belgium |
| EX/P4-9 | K. Jadeja Lithium Wall Conditioning Techniques in ADITYA-U Tokamak for Impurity and Fuel Control | India |
| EX/P4-10 | J. Ghosh Investigation of Toroidal Rotation Reversal in Impurities Seeding ADITYA-U Tokamak Plasmas | India |
| EX/P4-11 | T. Macwan Observation of Electrostatic Confinement of Runaway Electrons using a Biased Electrode in ADITYA-U Tokamak | India |
| EX/P4-12 | J. Ghosh Novel Concept for Disruption Mitigation in the ADITYA-U Tokamak by Fast Time Response Electromagnetic Driven Pellet Impurity Injector | India |
| EX/P4-13 | N. Yadava Investigation of Self-Absorbed Lithium Spectral Line Emissions During Li_2TiO_3 Injection in ADITYA-U Tokamak | India |
| EX/P4-15 | A. Kanik Initial Results of Plasma Potential and its Fluctuation Measurements in SOL Region of ADITYA-U Tokamak by Laser Heated Emissive Probe | India |
| EX/P4-16 | S. Aich Novel Approach to Estimate Plasma Current Density Profile with Magnetic Probes in ADITYA-U | India |
| EX/P4-17 | B. Labit H-Mode Physics Studies on TCV Supported by the EUROfusion Pedestal Database | Switzerland |
| EX/P4-18 | O. Sauter ITER Baseline Scenario Investigations on TCV and Comparison with AUG | Switzerland |

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| EX/P4-19 | K. Verhaegh Investigating the Role of Plasma-Atom/Molecule Interactions on Power, Particle and Momentum Balance During Detachment | UK |
| EX/P4-20 | M. Faitsch High Density, High Confinement, Power Exhaust Compatible H-Mode Regime in TCV and ASDEX-Upgrade | Germany |
| EX/P4-21 | F. Felici Integrated Plasma State Reconstruction, Off-Normal Event Handling and Control, with Application to TCV and ASDEX-Upgrade | Switzerland |
| EX/P4-22 | S. G. Baek Investigation of Scattering of Lower Hybrid Waves by Tokamak Boundary Plasmas on Alcator C-MOD and EAST | USA |
| EX/P4-24 | P. Savrukhn Plasma Control and Safe Discharge Termination During Disruption in Tokamaks | Russian Fed. |
| EX/P4-25 | I. Zemtsov Study of the ECR-Heating Influence on the Anomalous Transport of Tungsten Ions in T-10 Plasma | Russian Fed. |
| EX/P4-26 | S. Neudatchin Spontaneous and Triggered Abrupt and Nonlocal Reduction of Electron Heat and Density Fluxes and ITB Formation in T-10 Tokamak Plasmas with ECRH/ECCD | Russian Fed. |
| EX/P4-27 | S. Lebedev Ion Cyclotron Emission from the Ohmically Heated Plasma in the Tuman-3M Tokamak | Russian Fed. |
| EX/P4-28 | L. Askinazi Ion Cyclotron Emission from NBI Heated Plasma in the Tuman-3M Tokamak | Russian Fed. |
| EX/P4-29 | D. Koupienko Isotope Effect in Turbulent Transport in High Density FT-2 Tokamak Discharges | Russian Fed. |
| IAC/P4-1 | T. Asai Supersonic/Alfvénic Collision and Merging of Field-Reversed Configuration Plasmas | Japan |
| IAC/P4-3 | Y. Ono Overview of Merging Spherical Tokamak Experiments and Simulations for Burning, High- β and/or Absolute Minimum- B Plasma Formation | Japan |
| IAC/P4-4 | V. Postupaev Status of Activity on GOL-NB Multiple-Mirror Experiment | Russian Fed. |
| IAC/P4-5 | A. Sudnikov Plasma Flow Suppression in the Open Magnetic Traps by the Helical Mirror | Russian Fed. |

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| IAC/P4-6 | J. Jain Time Correlation Between Low-Energy, High-Energy X-Rays and Neutron Emission in Plasma Focus in the Context of Nuclear Fusion Mechanisms | Chile |
| IAC/P4-7 | D. Yakovlev The Gas-Dynamic Multimirror Trap Project | Russian Fed. |
| IAC/P4-8 | U. Shumlak Sheared-Flow-Stabilized Z Pinch as a Compact Fusion Device | USA |
| IAC/P4-9 | G. L. Ziegler Synopsis on the Unified Field Theory | USA |
| IAC/P4-11 | G. Elaragi Pulsed Power Technology for Driving Low Energy Plasma Focus Device | Egypt |
| IFE/P4-1 | C. Bhattacharya Density Incrustation at Au-Ch Interface | India |
| IFE/P4-3 | A. Sid Electron Ion Inverse Bremsstrahlung Absorption in Laser Fusion Magnetized Plasma | Algeria |
| IFE/P4-4 | J. Fuchs Investigating Magnetic Reconnection in ICF Conditions | France |
| IFE/P4-5 | N. Karlykhanov Simulation of Direct-Drive Targets for Megajoule Laser Facilities with Account for Nonlocal Electron Transport, Fast Electron Generation and Stimulated Scattering of Laser Radiation | Russian Fed. |
| IFE/P4-6 | V. Gopalswamy Statistically Informed Physics Understanding and Design Optimization of Direct-Drive Inertial Confinement Fusion Experiments | USA |
| IFE/P4-7 | A. Christopherson Thermonuclear Ignition and the Onset of Propagating Burn in Inertial Fusion Implosions | USA |
| IFE/P4-9 | S. Fujioka Efficient Fast Isochoric Heating Process Visualized with Spatial-Temporal-Resolved X-Ray Imaging | Japan |
| IFE/P4-10 | N. Iwata Efficient Plasma Heating by Kilojoule Petawatt Lasers with a Lateral Confinement of Fast Electrons | Japan |
| IFE/P4-11 | H. Nagatomo Improvement of Ignition and Burning Target Design for Fast Ignition Scheme | Japan |
| IFE/P4-12 | N. Higashi Theoretical Scaling of Fast Isochoric Heating for Laser Fusion | Japan |

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| IFE/P4-13 | T. Sano An Alternative Fast Ignition Scheme by Standing Whistler-Wave Heating | Japan |
| IFE/P4-14 | T. Ozaki Hot Electron and Ion Spectra on the Blow-Off Plasma Free Target in the GXII-LFEX Direct Fast Ignition Experiment | Japan |
| IFE/P4-15 | Y. Kitagawa Demonstration of Direct Fast Heating of Counter-Imploded Core Plasma by LFEX Laser | Japan |
| IFE/P4-16 | Y. Mori Progresses of Inertial Fusion Energy Program at GPI Hamamatsu toward Mini-Reactor Candy | Japan |
| IFE/P4-17 | A. Iwamoto Conceptual Design of Laser Fusion Subcritical Research Reactor with J-Epoch Facility for Fusion Engineering Researches | Japan |
| IFE/P4-18 | J. M. Perlado Why We Need Integral Concepts to Reach the Challenges in Physics of IFE Reaction Chamber | Spain |
| IFE/P4-19 | E. Koresheva Target Fabrication Technologies and Noncontact Delivery Systems to Develop a Free-Standing Target Factory Operating in The Repetition Mode at the IFE Relevant Level | Russian Fed. |
| TH/P4-1 | S. Yamoto Improved Screening Effect of Seeded High-Z Impurity Through SOL Plasma Flow Enhanced by Additional Low-Z Impurity Injection | Japan |
| TH/P4-2 | J. Guterl Progress Toward Predictive Modelling and In-Situ Monitoring of Tungsten Net Erosion in Tokamak Divertor | USA |
| TH/P4-3 | C. Sang Design of EAST Lower Divertor by Considering Target Erosion and W Ion Transport During the External Impurity Seeding | China, P. R. |
| TH/P4-4 | H. Nakamura Development of Simulation Codes to Treat Hydrogen Molecules Process in Divertor Plasma Region Including Divertor Plate | Japan |
| TH/P4-5 | M. S. Islam Simulation of Plasma and Neutral Particles During H Gas Puffing in the Divertor Region of Gamma 10/PDX using the Fluid and Kinetic Neutral Code | Japan |
| TH/P4-6 | A. Khrabryi Modelling Snowflake Divertors in MAST-U Tokamak | USA |

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| TH/P4-7 | C. S. Chang New Predictive Scaling Formula for ITER'S Divertor Heat-Load Width Informed by Gyrokinetic Simulation, Physics Discovery, and Machine Learning | USA |
| TH/P4-8 | J. Romazanov ERO2.0, A Code for Three-Dimensional Modelling of Global Material Erosion, Transport and Deposition in Fusion Devices | Germany |
| TH/P4-9 | F. Militello An Assessment of Alternative Divertors for the European DEMO | UK |
| TH/P4-10 | I. Senichenkov Modelling of ASDEX-Upgrade Detached Divertor with Radiating X-Point by SOLPS-ITER | Russian Fed. |
| TH/P4-11 | H. Bufferand Progress in Edge Plasma Turbulence Modelling: Hierarchy of Models from 2D Transport Applications to 3D Fluid Simulations in Realistic Tokamak Geometry | France |
| TH/P4-12 | G. Ciraolo Interpretative Modelling of Impurity Transport and Tungsten Sources in WEST Boundary Plasma | France |
| TH/P4-13 | H. Du SOLPS Analysis of Necessary Conditions for Detachment Cliff in HL-2M Advanced Snowflake Minus and DIII-D Conventional Divertors | China, P. R. |
| TH/P4-15 | S. Mao Simulation Study of the Radiation Efficiency of Different Impurity in Divertor Plasma | China, P. R. |
| TH/P4-16 | M. Ye Simulation Study of the Influence of Flux Expansion on the Detachment Sequence of HFS and LFS Divertor Targets | China, P. R. |
| TH/P4-17 | N. K. Bisai Experimental Validation of Universal Plasma Blob Formation Mechanism | India |
| TH/P4-18 | H. Hasegawa Linear Analysis of Cross-Field Dynamics with Feedback Instability on Detached Divertor Plasmas | Japan |
| TH/P4-21 | J. D. Lore Development of a Far-SOL Unstructured-Mesh Fluid-Plasma Transport Solver for RF Antenna Simulations | USA |
| TH/P4-22 | L. Aho-Mantila Role of Drifts, Impurities and Neutrals for Credible Predictions of Radiation and Power Flux Asymmetries in the DEMO Scrape-Off Layer | Finland |

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| TH/P4-23 | C. Lau Effects of Turbulence in Modifying Helicon Wave Current Drive Propagation and Efficiency | USA |
| TH/P4-24 | G. Wilkie Coupling Plasma and Neutral Kinetic Models: Considerations and Solutions | USA |
| TH/P4-25 | Y. Feng First Attempt to Quantify the Recycling Neutrals in W7-X by Means of Experiment-Model Comparison | Germany |

Wed

TH/4

Gyrokinetics: Energetic Particles, Magnetic Islands, and Flux-Driven Turbulence

Chair: Sen Abhijit (India)

(08:30 – 10:25)

- 08:30 TH/4-1 **A. Di Siena** Germany
Turbulence Suppression due to Energetic Particles: From First Principles to Gyrokinetic Simulations and Experimental Observations
- 08:47 TH/4-2 **A. Ishizawa** Japan
Interaction Between Energetic-Particle-Driven MHD Mode and Drift-Wave Turbulence Based on Global Gyrokinetic Simulation
- 09:04 TH/4-3 **W. Wang** USA
Effects of Magnetic Islands on Plasma Confinement and Self-Driven Current Generation
- 09:21 TH/4-4 **G. Dif-Pradalier** France
How the Narrow Edge-Scrape-Off Layer Interface Self-Organizes Turbulence Globally
- 09:38 TH/4-5 **K. Imadera** Japan
Spontaneous ITB Formation in Gyrokinetic Flux-Driven ITG/TEM Turbulence

09:55 – 10:25: Discussion

TH/5-EX/3

Transport and Confinement

Chair: Hyeon Park (Korea, Rep. of)

(10:40 – 12:35)

- 10:40 TH/5-1 **E. A. Belli** USA
Strong Reversal of Simple Isotope Scaling Laws in Tokamak Edge Turbulence
- 10:57 TH/5-2 **J. Citrin** Netherlands
Predict First: Flux-Driven Multichannel Integrated Modelling over Multiple Confinement Times with the Gyrokinetic Turbulent Transport Model QUALIKIZ
- 11:14 TH/5-3 **M. Nunami** Japan
Improved Prediction Scheme for Turbulent Transport by Combining Machine Learning and First-Principle Simulation
- 11:31 EX/3-1 **A. Mariani** Italy
Experimental Investigation and Gyrokinetic Simulations of Multiscale Electron Heat Transport in JET, AUG and TCV
- 11:48 EX/3-2 **E. de la Luna** Spain
Exploring the Physics of a High-Performance H-Mode with Small ELMs and Zero Gas Puffing in JET-ILW

12:05 – 12:35: Discussion

P5 Posters 5

(08:30 – 12:30)

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| EX/1-3R | S. Ding A Low Plasma Current (~8 MA) Approach for ITER'S Q=10 Goal | USA |
| TECH/2-1 | Y. Someya Progress in Design and Engineering Issues on JA DEMO | Japan |
| TECH/2-2 | O. Crofts Maintenance of a Fusion Power Plant: The EU Approach | UK |
| TECH/2-3Ra | J. Morris Preparing the Systems Code Process for EU-DEMO Conceptual Design | UK |
| TECH/2-3Rb | F. Franza MIRA: A Multiphysics Approach to Designing a Fusion Power Plant | Germany |
| TECH/2-4 | J. Menard Mission and Configuration Studies for a U.S. Sustained High-Power Density Tokamak Facility | USA |
| TECH/2-5 | S. Deshpande Role of Core Radiation Losses from Plasma and its Impact on ST Reactor Design Parameter Choices | India |
| TECH/2-6 | A. Molodyk Advanced Second Generation High Temperature Superconductor Wire for Fusion | Russian Fed. |
| TH/7-4 | J. L. Velasco KNOSOS, A Fast Neoclassical Code for Three-Dimensional Magnetic Configurations | Spain |
| EX/P5-1 | R. A. Pitts Strategies for First Wall Power Flux Management During Plasma Current Ramp-Up on ITER | ITER |
| EX/P5-2 | A. Liang Optimization of Lower Hybrid Wave Coupling for the WEST LHCD Launchers | France |
| EX/P5-3 | B. D. Wirth Measuring and Modelling Helium Accumulation in Single Crystal Tungsten Specimens Exposed to He Plasma Discharges in the WEST Reciprocating Collector Probe | USA |
| EX/P5-4 | L. Vermare Formation of the Radial Electric Field Profile in WEST Tokamak | France |
| EX/P5-5 | C. Reux Toroidal Field Coil Quench Caused by Runaway Electrons on the WEST Tokamak | France |
| EX/P5-6 | T. Dittmar Long Discharges in Steady State with D ₂ and N ₂ on the Actively Cooled Tungsten Upper Divertor in WEST | France |

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P5 *continued...*

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| EX/P5-7 | E. Tsitrone Investigation of Plasma Wall Interactions Between Tungsten Plasma Facing Components and Helium Plasmas in the WEST Tokamak | France |
| EX/P5-10 | J. Gaspar Divertor Power Loads and Scrape-Off Layer Width in the Large Aspect Ratio Full Tungsten Tokamak WEST | France |
| EX/P5-11 | M. Goniche Developing High Performance RF Heating Scenarios on the WEST Tokamak | France |
| EX/P5-14 | C. Mazzotta Helium Doped Plasmas on FTU | Italy |
| EX/P5-15 | F. Bombarda CVD Diamond Detectors for Fast VUV and SX-Ray Diagnostics on FTU | Italy |
| EX/P5-17 | L. Carraro Behavior of Heavy Metal Ions in FTU Plasmas | Italy |
| EX/P5-18 | D. Carnevale Latest Results on Quiescent and Postdisruption Runaway Electrons Mitigation Experiments at Frascati Tokamak Upgrade | Italy |
| EX/P5-20 | P. Martin Divertor Tokamak Test Facility: Science Basis and Status of the Project | Italy |
| EX/P5-22 | Z. Chen Realization of Divertor Configuration Discharge in J-TEXT Tokamak | China, P. R. |
| EX/P5-23 | Z. Chen Disruption Mitigation by Shattered Pellet Injection on J-TEXT | China, P. R. |
| EX/P5-24 | A. Sadykov First Ohmic Experiments on KTM Tokamak | Kazakhstan |
| EX/P5-25 | B. Chektybayev Test Results of Active Thermography Method for Plasma-Wall Interaction Studies on the KTM Tokamak | Kazakhstan |
| EX/P5-26 | S. Inoue Development of JT-60SA Equilibrium Controller with an Improved Iso-Flux Method and Vertical Displacement Events Predictor | Japan |
| EX/P5-27 | S. Naito Stabilization of Vertical Plasma Position in the PHIX Tokamak with Saddle Coils | Japan |
| EX/P5-28 | S. Mirnov Comparison of Various Combinations of Emitters and Collectors of the Tokamak T-11M Lithium Circuit | Russian Fed. |
| TECH/P5-1 | H. Utoh Design Study of Large Superconducting Coil System for JA DEMO | Japan |

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P5 *continued...*

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| TECH/P5-2 | C. Hoa EU DEMO Cryogenic System and Cryodistribution: Preconceptual Design for an Optimal Cooling of the Superconducting Magnets and the Thermal Shields | France |
| TECH/P5-3 | R. Hiwatari Development of Plant Concept Options of Energy Production in JA DEMO and its Adaptability for Ancillary Service in Future Grid | Japan |
| TECH/P5-4 | P. Prajapati Analysis of Heat Transport and Pipe-Routing Considerations for Blanket to Steam Generator for a Fusion Reactor | India |
| TECH/P5-5 | H. K. Chung A Planning Study of Virtual DEMO Based on Computer Simulations | Korea, Rep. of |
| TECH/P5-6 | G. Bailey Current Status of DEMO Activated Waste Studies | UK |
| TECH/P5-7 | Q. Cao Progress on the Neutronic and Shielding Analyses of CFETR | China, P. R. |
| TECH/P5-8 | S. Ananyev Concept Development and Candidate Technologies Selection for the Main DEMO-FNS Fuel Cycle Systems | Russian Fed. |
| TECH/P5-9 | Y. Shpanskiy Development and Integration Study of Fusion-Fission Hybrid Systems into Nuclear Power Fuel Cycle | Russian Fed. |
| TECH/P5-10 | F. P. Orsitto Fusion Devices as Neutron Sources for FFH (Fusion-Fission Hybrid Reactors): Analysis of Tokamak Parameters, Readiness Level and Design of Concept Validation Experiments | Italy |
| TECH/P5-11 | A. Boozer Stellarators as a Fast Path to Fusion | USA |
| TECH/P5-12 | S. Konishi Direct Recycling of Fuel Gas from Divertor Pumping and its Impact on Tritium Self-Sufficiency of DEMO without Initial Loading | Japan |
| TECH/P5-13 | N. Prinja Fusion Specific Technology Readiness Levels | UK |
| TECH/P5-14 | S. Gupta Process Intensification in Water Detritiation System: A Case Study | India |
| TECH/P5-15 | N. Yanagi High-Temperature Superconducting Magnet System for the Next-Generation Helical Device | Japan |
| TECH/P5-16 | C. Grisolia Modelling of Hydrogen Trapping, Diffusion and Permeation in Tokamak | France |

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P5 *continued...*

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| TECH/P5-17 | R. Raman Prototype Tests of the Electromagnetic Particle Injector Concept Demonstrating its Primary Advantages for Fast Time Response Disruption Mitigation in Tokamaks | USA |
| TECH/P5-18 | D. Rapisarda The Dual Coolant Lithium Lead Breeding Blanket: Status and Perspectives | Spain |
| TECH/P5-19 | R. Vila Development of the European WP on Optical Materials for DEMO Diagnostics and Control: Current Activities and Perspectives | Spain |
| TECH/P5-21 | S. Qu Neutronics Effect Study of Homogeneous Model on Solid Breeder Blanket | China, P. R. |
| TECH/P5-22 | X. Zhang Investigations of Coupling MHD Duct Flows under Inclined Transversal Magnetic Fields for Liquid Metal Blankets | China, P. R. |
| TECH/P5-23 | B. Gong Fragmentation Behaviors and Mechanical Properties of the Tritium Breeder Pebble Bed for Fusion Blanket | China, P. R. |
| TECH/P5-24 | R. Gangradey A Solution to Evacuate Enormous Gas Load in a Fusion Machine During Baking and Plasma Operation: Cryopump | India |
| TECH/P5-25 | F. Okino Experimental Validation of Tritium Recovery System from Liquid Pb-Li Breeding Blanket by Vacuum Sieve Tray Concept | Japan |
| TECH/P5-26 | S. Ito Low-Resistance Joint Development for Segment-Fabrication of High-Temperature Superconducting Fusion Magnets | Japan |
| TECH/P5-27 | A. Vertkov Designing and Experimental Validation of Prototypes of Liquid Lithium Plasma Facing Components for Steady-State Tokamak | Russian Fed. |
| TECH/P5-28 | K. Mukai TECH Evaluation of Tritium Production Rate in a Blanket Mock-Up using a Compact Fusion Neutron Source | Japan |
| TECH/P5-29 | J. Yagi The Electrochemical Approaches for the Development of a Liquid Blanket System | Japan |
| TECH/P5-30 | C. Chen New Compact Torus Injection System on KTX Reversed Field Pinch Device | China, P. R. |
| TECH/P5-31 | M. Rozenkevich Project of the Fuel Cycle Based on the Example of the Ignitor Tokamak at the Russian Site | Russian Fed. |

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P5 *continued...*

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| TECH/P5-32 | A. Zhirkin Benchmark-Experiment for Evaluating Nuclear Data Libraries used to Model Subcritical Blanks of Thermonuclear Installations | Russian Fed. |
| TECH/P5-34 | B. Doshi Implementation of Novel Technique to Support the Electromagnetic Forces and to Ensure the Structural Reliability of Refurbished Toroidal Field Magnet System of the ADITYA-U Tokamak | India |
| TECH/P5-35 | A. Deoghar Entrapment of Impurities Inside a Cold Trap: A Purification Process for Removal of Corrosion Impurities from Molten Pb-16Li | India |
| TH/P5-1 | S. Krasheninnikov Impact of Plasma Flow Velocity Shear and Neutrals on Edge Plasma Instabilities | USA |
| TH/P5-2 | L. Qi Role of Zonal Flow Staircase in Electron Heat Avalanches in KSTAR L-Mode Plasmas | Korea, Rep. of |
| TH/P5-3 | P. Diamond Transport Physics of the Density Limit | USA |
| TH/P5-4 | R. Heinonen Turbulence Model Reduction by Deep Learning | USA |
| TH/P5-5 | H. Zhu Progress in Theoretical Understanding of the Dimits Shift and the Tertiary Instability in Drift-Wave Turbulence | USA |
| TH/P5-6 | G. Dong MARS-Q Modelling of Kink-Peeling Instabilities in QH-Mode Plasma | China, P. R. |
| TH/P5-7 | M. V. Falessi Nonlinear Equilibria and Transport Processes in Burning Plasmas | Italy |
| TH/P5-8 | J. Seo A New Hybrid Model for Efficient Simulation of Ion Scale Electromagnetic Turbulence in Tokamak Plasma | Korea, Rep. of |
| TH/P5-9 | K. Fujita Global Calculation of Neoclassical Impurity Transport Including the Variation of Electrostatic Potential | Japan |
| TH/P5-10 | S. Morosohk Neural Network Model of the Multimode Anomalous Transport Module | USA |
| TH/P5-11 | H. Wilson Drift-Kinetic Theory of Neoclassical Tearing Modes Close to Threshold in Tokamak Plasmas | UK |
| TH/P5-12 | S. Yi Zonal Flow Amplification in Rotating Tokamak Plasmas | Korea, Rep. of |

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P5 *continued...*

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| TH/P5-13 | S. Usami Particle Simulation on Merging Processes of two Spherical Tokamak-Type Plasmoids Confined in a Conducting Vessel | Japan |
| TH/P5-14 | V. Soukhanovskii Modelling of Deuterium Radiation Transport in Super-X and Snowflake Divertor Plasmas in MAST-U Tokamak | USA |
| TH/P5-15 | T. S. Hahn Extended Bounce-Kinetic Model for Trapped Particle Mode Turbulence | Korea, Rep. of |
| TH/P5-16 | T. Moritaka Isotope Effects in Ion Temperature Gradient Modes with Radial Electric Field in Large Helical Device | Japan |
| TH/P5-17 | E. Sánchez Gyrokinetic Simulations in Stellarators using Different Computational Domains | Spain |
| TH/P5-18 | I. Chavdarovski Effects of Core Plasma on the Low Frequency Alfvén and Acoustic Eigenmodes | Korea, Rep. of |
| TH/P5-19 | Y. Yamamoto Mechanism of Toroidal Flow Generation by Electron Cyclotron Heating in HSX and LHD Plasmas | Japan |
| TH/P5-20 | Y. Sarazin Impact of Aspect Ratio on Tokamak Confinement: Nonlinear Gyrokinetic Evidence, WEST Results and Implications for DEMO | France |
| TH/P5-22 | Y. Morishita Integrated Transport Simulation of LHD Plasma Applying Data Assimilation Technique | Japan |
| TH/P5-23 | S. Mulas Experimental Validation of Neutral Beam Current Drive Simulations in TJ-II Plasmas | Spain |
| TH/P5-24 | A. Teplukhina Investigation of Fast Ion Transport Induced by ICRF Heating and MHD Instabilities in JET Plasma Discharges | USA |
| TH/P5-25 | J. H. Nicolau Global Gyrokinetic Particle Simulations of Microturbulence in W7-X and LHD Stellarators | USA |
| TH/P5-26 | S. Maeyama Cross-Scale Interactions Between Trapped-Electron-Mode and Electron-Temperature-Gradient-Mode Turbulence | Japan |
| TH/P5-27 | D. Coster Building a Turbulence-Transport Workflow Incorporating Uncertainty Quantification for Predicting Core Profiles in a Tokamak Plasma | Germany |

EX/4 MHD and ELM

Chair: Sergei Lebedev (Russian Fed.)

(14:00 – 16:12)

| | | | |
|-------|----------|--|----------------|
| 14:00 | EX/4-1 | A. Burckhart Experimental Evidence of Magnetic Flux Pumping at ASDEX-Upgrade | Germany |
| 14:17 | EX/4-2 | M. Jiang Influence of Large Magnetic Island Structures on Turbulence and Quasi-Coherent Modes in Tokamak Plasmas | China, P. R. |
| 14:34 | EX/4-3 | J.-K. Park Quasi-Symmetric Error Field Correction in Tokamaks | USA |
| 14:51 | EX/4-4Ra | A. Loarte Integrated ELM and Divertor Flux Control using RMPs with Low Input Torque in EAST in Support of the ITER Research Plan | ITER |
| | EX/4-4Rb | First Demonstration of Full ELM Suppression in Low Input Torque Plasmas for ITER using $N=4$ RMP in EAST | |
| 15:08 | EX/4-5Ra | Y. In Toward Holistic Understanding of the ITER-Like RMP ELM Control on KSTAR | Korea, Rep. of |
| | EX/4-5Rb | Edge Fluctuation Dynamics in RMP-Driven ELM Suppression and ELM-Free H-Mode Plasma in KSTAR | |
| 15:25 | EX/4-6 | A. Diallo First Observation of ELM Suppression without Confinement Degradation due to Geodesic Acoustic Mode (GAM)-Like Mode Triggered by Boron Powder Injection | USA |

15:42 – 16:12: Discussion

Thu

TECH/3 Divertor and Heating

Chair: Tomohiro Morisaki (Japan)

(16:27 – 18:45)

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|-------|------------|--|-------------|
| 16:27 | TECH/3-1 | T. Morgan Accelerated Lifetime Tests of ITER-Like Tungsten Monoblocks in Magnum-PSI | Netherlands |
| 16:44 | TECH/3-2Ra | R. Neu Materials and Components for the DEMO Divertor | Germany |
| | TECH/3-2Rb | Plasma Exhaust and Divertor Designs in Japan and Europe Broader Approach, DEMO Design Activity | |
| 17:01 | TECH/3-3Ra | M. Tokitani Advanced Multistep Brazing (AMSB) for Fabrication of the Divertor Heat Removal Component | Japan |
| | TECH/3-3Rb | An Overview of Thick Tungsten Coatings Prepared by Chemical Vapour Deposition and Manufacture of Relevant Mockups | |
| 17:18 | TECH/3-4Ra | M. Kashiwagi 100 Seconds Negative Ion Accelerations for JT-60SA Negative-Ion-Based Neutral Beam Injector | Japan |
| | TECH/3-4Rb | Challenges toward Improvement of Deuterium Injection Power in LHD Negative-Ion-Based NBIS | |
| 17:35 | TECH/3-5Ra | J. Hillairet WEST Actively Cooled Load Resilient Ion Cyclotron Resonance Heating Results | France |
| | TECH/3-5Rb | Status of the WEST Travelling Wave Array Antenna Design and Results from the High Power Mock-Up | |
| 17:52 | TECH/3-6 | A. Seltzman Additive Manufacturing of a High Field Side Tokamak Lower Hybrid Current Drive Launcher from GRCOP-84 | USA |

18:09 – 18:45: Discussion

P6

Posters 6

(14:00 – 18:45)

| | | |
|---------|--|----------------|
| EX/2-4 | M. Kobayashi RMP Induced H-Mode Transition During Divertor Detachment with Enhanced Edge Radiation in Deuterium Plasmas in LHD | Japan |
| EX/2-5 | A. Kallenbach Developments towards an ELM-Free DEMO Pedestal Radiative Cooling Scenario in ASDEX-Upgrade | Germany |
| EX/6-2 | K. Ida Transition Between Isotope-Mixing and Nonmixing States in Hydrogen-Deuterium Mixture Plasmas in the Large Helical Device | Japan |
| EX/6-3 | M. N. A. Beurskens Confinement in Electron Heated Plasmas in Wendelstein 7-X and ASDEX-Upgrade: The Necessity to Control Turbulent Transport | Germany |
| EX/6-4 | H. Takahashi Performance Integration of High Temperature Plasmas in the LHD Deuterium Operation | Japan |
| EX/7-4 | M. Jakubowski Overview of the Results from the Divertor Experiments at Wendelstein 7-X and their Implications for Steady State Operation | Germany |
| EX/8-3 | K. Ogawa A Comprehensive Study of Energetic Particle Transport due to Energetic Particle Driven MHD Instabilities in LHD Deuterium Plasmas | Japan |
| TH/2-2 | D. Chandra A Nonlinear Simulation Study of the Effect of Toroidal Rotation on RMP Control of ELMs | India |
| TH/2-3 | T. Xia The Simulations on the Control of ELM and Edge Turbulence by RF Waves in EAST H-Mode Discharges | China, P. R. |
| TH/2-4 | S. Kim On Effect of $N=2$ RMP to Edge Pedestal in KSTAR with Nonlinear MHD Simulation | Korea, Rep. of |
| TH/2-5 | G. Hao Toroidal Modelling of Plasma Response to RMP Fields for HL-2M | China, P. R. |
| TH/3-1 | R. Hager Gyrokinetic Simulation in Realistic Divertor Geometry Reproduces Density Pump-Out and Enhanced Electron Heat Confinement in Tokamak Edge Plasma under Resonant Magnetic Perturbations | USA |
| TH/3-4 | A. Hakim First Nonlinear Full- f Electromagnetic Gyrokinetic Continuum Simulations of Turbulence in Tokamak Scrape-Off Layer and Pedestal | USA |
| EX/P6-1 | S. Lazerson First Neutral Beam Experiments on Wendelstein 7-X | Germany |

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P6 *continued...*

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| EX/P6-2 | A. Langenberg Impurity Transport in Ion- and Electron-Root Plasmas of Wendelstein 7-X | Germany |
| EX/P6-3 | A. Dinklage Theory-Based Models for the Control of W7-X Divertor Plasmas | Germany |
| EX/P6-4 | J. Geiger Confinement and Equilibrium with Internal Islands in a Configuration Scan with Respect to IOTA in W7-X | Germany |
| EX/P6-5 | C. Killer Turbulent Transport in the Scrape-Off Layer of Wendelstein 7-X | Germany |
| EX/P6-6 | Y. Liang Leveraging 3D Magnetic Topologies in Support of Long-Pulse High Performance Plasma Operation | Germany |
| EX/P6-7 | S. Brezinsek Plasma-Surface Interaction in the Stellarator W7-X: Conclusion Drawn from Operation with Graphite Plasma-Facing Components | Germany |
| EX/P6-8 | T. Estrada Radial Electric Field and Density Fluctuations Measured by Doppler Reflectometry During the Post-Pellet Enhanced Confinement Phase in W7-X | Spain |
| EX/P6-9 | D. Zhang Plasma Radiation Behavior Approaching High-Radiation Scenarios in W7-X | Germany |
| EX/P6-10 | A. Alonso Net Parallel Carbon Rotation in the Core of the Wendelstein 7-X Stellarator: A Deviation from Neoclassical Predictions? | Spain |
| EX/P6-11 | V. Perseo Direct 2D Measurements of Parallel Counter-Streaming Flows in the W7-X Scrape-Off Layer for Attached and Detached Plasmas | Germany |
| EX/P6-12 | H. Laqua High-Performance ECRH at W7-X: Experience and Perspectives | Germany |
| EX/P6-13 | M. Zanini Sawtooth Crash Dynamics During ECCD Operations at W7-X | Germany |
| EX/P6-15 | F. Reimold Experimental Indications of High-Recycling and the Role of Pressure and Power Dissipation for Detachment at W7-X | Germany |
| EX/P6-16 | G. Fuchert Energy Confinement in W7-X, More than just a Scaling Law | Germany |
| EX/P6-17 | L. Eliseev 2D Distributions of Potential and Density Mean-Values and Oscillations in the ECRH and NBI Plasmas at the TJ-II Stellarator | Russian Fed. |
| EX/P6-18 | Á. Cappa NBI-Driven Shear Alfvén Waves in the Presence of ECR Heating and EC Driven Current in the TJ-II Stellarator | Spain |

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P6 continued...

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| EX/P6-19 | C. Hidalgo Isotope Effect, Operational Limits and Zonal Flows in the TJ-II Stellarator | Spain |
| EX/P6-20 | K. J. McCarthy Physics Studies of Cryogenic Pellet and Tracer-Loaded Pellet (TESPEL) Injections in the Stellarator TJ-II | Spain |
| EX/P6-21 | T. Yokoyama Characterization and Sparse Modelling of Radiation Collapse and Density Limit in LHD | Japan |
| EX/P6-22 | G. Motojima Effects of Partially Installed Tungsten Coated Divertor Tiles on the LHD Plasma and Plasma-Wall Interactions | Japan |
| EX/P6-23 | H. Yamada Investigation of Isotope Effect on Energy Confinement Time and Thermal Transport in L-Mode Plasmas on LHD | Japan |
| EX/P6-24 | S. Masuzaki Distribution of the Remaining Tritium in the LHD Vacuum Vessel | Japan |
| EX/P6-25 | Y. Takemura RMP Effect on Slowing Down of Locked-Mode-Like Instabilities in Helical Plasmas | Japan |
| EX/P6-26 | H. Matsuura Observation of Nuclear Elastic Scattering Effect by Energetic Protons on Deuteron Slowing-Down Behavior in the Large Helical Device | Japan |
| EX/P6-27 | D. Kato Assessment of W Density in LHD Core Plasmas using Visible Forbidden Lines of Highly Charged W Ions | Japan |
| EX/P6-28 | K. Mukai Steady-State Sustainment of Divertor Detachment with Multispecies Impurity Seeding in LHD | Japan |
| EX/P6-29 | S. Ohdachi Suppression of the Energetic Particle Driven Interchange Mode in the Large Helical Device | Japan |
| EX/P6-30 | T. Kobayashi Isotope Effects in Internal Transport Barrier Strength on Large Helical Device | Japan |
| EX/P6-31 | T. Tsujimura Improved Performance of ECRH by Real-Time Deposition Location Control and Perpendicular Injection in LHD | Japan |
| EX/P6-32 | K. Tanaka Magnetic Configuration Effects on Turbulence Driven Transport from LHD and W7-X Identical Experiments | Japan |
| EX/P6-33 | F. Nespoli Demonstration of Real-Time Wall Conditioning and Plasma Control Through Impurity Powder Injection in LHD | USA |

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P6 *continued...*

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| EX/P6-34 | K. Nagasaki Effect of Magnetic Configuration on Energy Confinement and Energetic-Particle-Driven MHD Modes in Heliotron J | Japan |
| EX/P6-35 | S. Ohshima Turbulent Properties against Hydrogen Isotope Ratio and Zonal Flow Activities in Heliotron J | Japan |
| EX/P6-36 | S. Kobayashi Study of NBI Plasma Start-Up Assisted by Seed-Plasma Generation using Nonresonant Microwave Heating in Heliotron J | Japan |
| EX/P6-37 | V. Vargas MHD Calculations, Microwave Heating Scenarios Simulations and Diagnostics Updates on SCR-1 Stellarator | Costa Rica |
| EX/P6-39 | J. Harrison Overview of First Physics Results from MAST Upgrade | UK |
| TH/P6-2 | C. Bourdelle Flux Driven Pedestal Formation in Tokamaks: Turbulence Simulations Validated against the Isotope Effect | France |
| TH/P6-3 | Y. Liu Towards Prediction of ELM Control by RMP in ITER Based on Linear and Quasi-Linear Plasma Response | USA |
| TH/P6-5 | W. Zhang Nonlinear Dynamics of Frequency Oscillation of Alfvén Eigenmodes in Toroidal Plasmas | China, P. R. |
| TH/P6-6 | C. Ham Understanding Reactor Relevant Tokamak Pedestals | UK |
| TH/P6-7 | X. Zhang Mitigation Effects of Fishtail Divertor on ELM Thermal Shock | China, P. R. |
| TH/P6-8 | K. C. Lee Plasma-Neutral Momentum Exchange and its Applications to Edge Localized Mode and Toroidal Rotation on Tokamaks | Korea, Rep. of |
| TH/P6-9 | S. Jizhong Effect of Pedestal Impurity Li on ELMs During Real-Time Li Powder Injection Studied by BOUT++ MHD Model Coupled with Impurity Module | China, P. R. |
| TH/P6-14 | Ö. Asztalos Study of Filament Dynamics using Synthetic and Experimental BES Diagnostics in the Scrape-Off Layer | Hungary |
| TH/P6-15 | D. Moulton Recent Modelling of Long-Legged Divertor Configurations | UK |
| TH/P6-16 | L. Xiang Understanding the Effects of Super-X Divertor Configuration on Optimizing Operation Space in DEMO | UK |

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P6 *continued...*

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| TH/P6-17 | M. Dorf 5D Continuum Gyrokinetic Simulations of the Electrostatic ITG Instability in Divertor Tokamaks | USA |
| TH/P6-18 | A. Y. Sharma Electromagnetic Schemes in the Global Gyrokinetic PIC Code XGC for Higher-Fidelity Simulation of Long-Wavelength Modes in the Edge | USA |
| TH/P6-19 | J. King Integrating Tokamak-Edge MHD-Fluctuation Modelling with Transport | USA |
| TH/P6-20 | S. Smith ELM Burn-Through Simulations for MAST-U Super-X Plasmas | UK |
| TH/P6-21 | S. Futatani Nonlinear MHD Modelling of Pellet Triggered ELM in JT-60SA | Spain |
| TH/P6-22 | H. Frerichs Divertor Detachment in ITER during Application of Resonant Magnetic Perturbations for ELM Suppression | USA |
| TH/P6-23 | S. Nowak Predictive Dynamics of Tearing Modes for Plasma Stability in DT and TT Scenarios Considering Jet Baseline and Hybrid Discharges with Mixture of Isotopes | Italy |
| TH/P6-24 | F. Subba Benchmarking and Validating SOLPS-ITER, SOLEDGE2D and UEDGE for Power Exhaust Modelling in Future Tokamaks | Italy |

Thu

EX/5-TH/6 Disruption

Chair: Min Xu (P. R. China)

(08:30 – 10:25)

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|-------|------------|--|----------------|
| 08:30 | EX/5-1Ra | S. Jachmich | ITER |
| | | Shattered Pellet Injection Experiments at JET in Support of the ITER Disruption Mitigation System Design | |
| | TECH/1-4Rb | Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER | |
| 08:47 | EX/5-2Ra | D. Shiraki | USA |
| | | DIII-D and International Research towards Extrapolating Shattered Pellet Injection Performance to ITER | |
| | EX/5-2Rb | A Novel Path to Runaway Electron Mitigation via Deuterium Injection and Current-Driven Kink Instability | |
| | TECH/1-4Rb | Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER | |
| 09:04 | EX/5-3Ra | J. Kim | Korea, Rep. of |
| | | Disruption Mitigation by Symmetric Dual Injection of Shattered Pellets in KSTAR | |
| | TECH/1-4Rb | Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER | |
| 09:21 | TH/6-1 | E. Nardon | France |
| | | Theory and Modelling Activities in Support of the ITER Disruption Mitigation System | |
| 09:38 | EX/5-4 | J. Barr | USA |
| | | Development and Experimental Qualification of Novel Disruption Prevention Techniques on DIII-D | |

09:55 – 10:25: Discussion

TECH/4 Material, PMI, and Neutron Source

Chair: Brian Wirth (USA) (10:45 – 12:35)

- 10:40 TECH/4-1 **P. Cara** Japan
IFMIF/EVEDA Project: Achievements and Outlooks Beyond 2020
- 10:57 TECH/4-2Ra **M. Rieth** Germany
Increasing Irradiation and Thermo-Hydraulic Performance of Breeding Blankets by ODS Steel Plating
- TECH/4-2Rb Effect of Micro-Alloying and Heat Treatment on the Neutron Irradiation Behavior of Eurofer-Type Steels
- 11:14 TECH/4-3 **T. Nozawa** Japan
Status and the Challenge of Japanese Materials Property Handbook to Facilitate Structural Design Criteria for DEMO In-Vessel Components
- 11:31 TECH/4-4 **J. Rapp** USA
The U.S. Approach to Address Plasma-Material Interactions and Fusion Nuclear Science with Linear Plasma Devices
- 11:48 TECH/4-5 **A. Lasa** USA
A Validated Multiphysics Modelling Approach to Predicting Erosion, Redeposition and Gas Retention in Fusion Tokamak Divertors

12:05 – 12:35: Discussion

P7 Posters 7 (08:30 – 12:30)

| | | |
|------------|--|--------------|
| TECH/3-1 | T. Morgan Accelerated Lifetime Tests of ITER-Like Tungsten Monoblocks in Magnum-PSI | Netherlands |
| TECH/3-2Ra | R. Neu Materials and Components for the DEMO Divertor | Germany |
| TECH/3-2Rb | N. Asakura Plasma Exhaust and Divertor Designs in Japan and Europe Broader Approach, DEMO Design Activity | Japan |
| TECH/3-3Ra | M. Tokitani Advanced Multistep Brazing (AMSB) for Fabrication of the Divertor Heat Removal Component | Japan |
| TECH/3-3Rb | Z. Chen An Overview of Thick Tungsten Coatings Prepared by Chemical Vapour Deposition and Manufacture of Relevant Mockups | China, P. R. |
| TECH/3-4Ra | M. Kashiwagi 100 Seconds Negative Ion Accelerations for JT-60SA Negative-Ion-Based Neutral Beam Injector | Japan |
| TECH/3-4Rb | K. Tsumori Challenges Toward Improvement of Deuterium Injection Power in LHD Negative-Ion-Based NBIS | Japan |
| TECH/3-5Ra | J. Hillairet WEST Actively Cooled Load Resilient Ion Cyclotron Resonance Heating Results | France |
| TECH/3-5Rb | R. Ragona Status of the WEST Travelling Wave Array Antenna Design and Results from the High Power Mock-Up | Belgium |
| TECH/3-6 | A. Seltzman Additive Manufacturing of a High Field Side Tokamak Lower Hybrid Current Drive Launcher from GRCOP-84 | USA |
| TH/4-3 | W. Wang Effects of Magnetic Islands on Plasma Confinement and Self-Driven Current Generation | USA |
| TH/4-4 | G. Dif-Pradalier How the Narrow Edge-Scrape-Off Layer Interface Self-Organizes Turbulence Globally | France |
| TH/4-5 | K. Imadera Spontaneous ITB Formation in Gyrokinetic Flux-Driven ITG/TEM Turbulence | Japan |
| TH/5-1 | E. A. Belli Strong Reversal of Simple Isotope Scaling Laws in Tokamak Edge Turbulence | USA |

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P7 *continued...*

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| TH/5-3 | M. Nunami Improved Prediction Scheme for Turbulent Transport by Combining Machine Learning and First-Principle Simulation | Japan |
| EX/P7-1 | M. Spolaore Current Carrying Filaments in the L-Mode, H-Mode and ELMs in RFX-Mod Tokamak Operation | Italy |
| EX/P7-2 | M. Gobbin Ion Heating and Energy Balance During Magnetic Reconnection Events in the RFX-Mod Experiment | Italy |
| EX/P7-3 | M. Zuin Dynamics and Confinement of Ultralow-Q Plasmas in the RFX-Mod Device | Italy |
| EX/P7-4 | L. Marrelli Status of the RFX-Mod2 Reversed Field Pinch Upgrade | Italy |
| EX/P7-5 | M. Boyer Machine Learning Accelerated Models for Scenario Optimization on NSTX-U | USA |
| EX/P7-6 | E. D. Fredrickson Emission in the Ion Cyclotron Range of Frequencies (ICE) on NSTX(-U) | USA |
| EX/P7-7 | M. Cecconello Study of Fast Ions Redistribution and Losses due to Energetic Particle Modes in MAST | Sweden |
| EX/P7-8 | J. Berkery Exploration of the Equilibrium and Stability Properties of Spherical Tokamaks and Projection for MAST-U | USA |
| EX/P7-9 | S.-H. Kim Experimental Results on Current Drive by Lower Hybrid Fast Wave in VEST | Korea, Rep. of |
| EX/P7-10 | K. Lee First Neutral Beam Heating Experiments in Versatile Experiment Spherical Torus | Korea, Rep. of |
| EX/P7-11 | S. Kim Internal Reconnection Events in Versatile Experiment Spherical Torus | Korea, Rep. of |
| EX/P7-12 | G. Kurskiev Energy Confinement in a Spherical Tokamak Globus-M2 with a Toroidal Magnetic Field Approaching 0.8 T | Russian Fed. |
| EX/P7-13 | A. Yashin First Observations of the Transition to the H-Mode on the Globus-M2 Tokamak using Doppler Backscattering | Russian Fed. |

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| EX/P7-14 | K. Hanada Control of Fuel Particle Balance with the Wall Temperature Modification and Particle Compression in the Hot Wall on All-Metal Plasma Facing Wall in QUEST | Japan |
| EX/P7-15 | T. Onchi Plasma Current Ramp-Up with 28 Ghz Second Harmonic Electron Cyclotron Wave in the Quest Spherical Tokamak | Japan |
| EX/P7-16 | N. Tsujii Modification of the Magneto-Hydro-Dynamic Equilibrium by the Lower-Hybrid Wave Driven Fast Electrons on the TST-2 Spherical Tokamak | Japan |
| EX/P7-17 | A. Ejiri Energy, Momentum and Particle Balances of Electrons in Lower Hybrid Wave Sustained Plasmas on the TST-2 Spherical Tokamak | Japan |
| EX/P7-18 | H. Tanaka Electron Beam Injection to Noninductively-Produced Spherical Tokamak Plasmas by Electron Bernstein Wave in LATE | Japan |
| EX/P7-19 | M. Akimitsu Multiple Plasmoid Formation and Ejection in TS-3U and TS-4U Merging Tokamaks Experiments | Japan |
| EX/P7-20 | H. Tanabe Global Ion Heating/Transport During Merging Spherical Tokamak Formation | Japan |
| EX/P7-21 | M. Inomoto Control of Electron Acceleration Process During Merging Start-Up of Spherical Tokamak | Japan |
| EX/P7-22 | L. Araya-Solano Implementation of the Spherical Tokamak MEDUSA-CR | Costa Rica |
| EX/P7-23 | X. Xu Divertor Heat Flux Broadening by Grassy ELMs | USA |
| TECH/P7-1 | S. E.-D. El-Morshedy Thermal Hydraulic Modelling and Analysis of ITER Tungsten Divertor Monoblock | Egypt |
| TECH/P7-2 | V. Slugen Advanced Positron Annihilation Studies of CuCrZr Alloys for Fusion Technology | Slovakia |
| TECH/P7-3 | I. Tazhibayeva Overview of Fusion Research Activities in the Republic of Kazakhstan | Kazakhstan |
| TECH/P7-4 | D. Terentyev Recent Progress in the Assessment of Irradiation Effects for In-Vessel Fusion Materials: Tungsten and Copper Alloys | Belgium |

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| TECH/P7-5 | M. Diez Observation of Tungsten Plasma-Facing Components after the First Phase of Operation of the WEST Tokamak | France |
| TECH/P7-6 | H.-S. Zhou R&D Progress of the Divertor Material/Component Testing Facilities of Craft | China, P. R. |
| TECH/P7-8 | V. Menon Reduction of Critical Heat Flux due to Steep Power Transients on PFCS | India |
| TECH/P7-9 | E. Kolemen Divertor Design for Low-Recycling Regime Tokamak: Concept, Experiments and Simulations | USA |
| TECH/P7-10 | M. Zharkov Upgraded Design and Modelling of Prototype of the Lithium Divertor Module of KTM Tokamak | Russian Fed. |
| TECH/P7-11 | M. Ono Active Mitigation System for Protecting Solid and/or Liquid Divertor PFCS from Transient High Heat Flux Events in Fusion Reactors | USA |
| TECH/P7-12 | M. Kisaki Study of Negative Ion Beam Optics in Real and Phase Spaces | Japan |
| TECH/P7-13 | A. Toneyawa Characteristics of the Extracted Negative-Ion Beam in a Cesium-Free Negative-Ion Source using TPDsheet-U | Japan |
| TECH/P7-14 | M. Cavenago Progress on NIO1 Ion Source and on Energy Recover Tests | Italy |
| TECH/P7-15 | C. Hopf Neutral Beam Injection for Fusion Reactors: Technological Constraints versus Functional Requirements | Germany |
| TECH/P7-16 | T. Kariya Development of 28/35 Ghz Dual-Frequency and 14 Ghz Gyrotrons for Advanced Fusion Devices | Japan |
| TECH/P7-17 | G. M. Wallace High Field Side Launch Lower Hybrid Current Drive for CFETR | USA |
| TECH/P7-18 | L. Yan Development of Megawatt Radiofrequency Ion Source for the Neutral Beam Injector on HL-2A Tokamak | China, P. R. |
| TECH/P7-19 | G. Gantenbein High Power Gyrotron Development for Advanced Fusion Devices | Germany |
| TECH/P7-20 | O. Sotnikov Development of High-Voltage Negative Ion Based Neutral Beam Injector for Fusion Devices | Russian Fed. |

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| TECH/P7-21 | M. Bandyopadhyay Novel Surface Assisted Volume Negative Ion Source: Concept to Reality | India |
| TECH/P7-22 | M. R. Jana Performance of High Heat Flux Test of Positive Ion Neutral Injector Ion Source Back Plate | India |
| TECH/P7-24 | L. Packer Technological Exploitation of the JET Nuclear Environment: Progress in Neutron Field Characterization and ITER Materials Irradiation | UK |
| TECH/P7-25 | M. Subbotin Concept of the ICR Plasma Heating System for Ignitor-Like Tokamak in Relation to the Russian Site | Russian Fed. |
| TECH/P7-27 | D. Wunderlich NNBI for ITER: Status of Long Pulses in Deuterium at the Test Facilities Batman Upgrade and ELISE | Germany |
| TH/P7-1 | Z. Lin Verification and Validation of Particle Simulation of Turbulent Transport in FRC | USA |
| TH/P7-3 | E. Serre Interaction Between Magnetic Geometry and Turbulence in 3D Global Fluid Simulations | France |
| TH/P7-4 | K. Hallatschek Turbulence Simulations and Braginskii-Style Transport Coefficients Based on High Precision Gyrokinetic Landau Collision Operator | Germany |
| TH/P7-5 | D. Li Influence of High Magnetic Field on Coulomb Collision and Plasma Transport | China, P. R. |
| TH/P7-6 | J. M. García-Regaña Turbulent Transport of Impurities in 3D Devices | Spain |
| TH/P7-7 | E. Narita Quasi-linear Turbulent Particle and Heat Transport Modelling with Development of Unique Saturation Rules for Insights into Profile Formation Mechanisms | Japan |
| TH/P7-8 | T.-H. Watanabe Kinetic Ion Dynamics in the Electron-Scale Turbulent Transport: A Key Ingredient of Multiscale Interactions in Turbulence | Japan |
| TH/P7-9 | N. Kumar Investigation of Turbulent Transport in the Inner Core of JET H-Mode Plasmas and Applications to ITER | France |
| TH/P7-10 | P. B. Snyder A Sustainable High Power Density (SHPD) Tokamak to Enable a Compact Fusion Pilot Plant | USA |

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| TH/P7-11 | N. Poolyarat Transport Simulations of Plasmas in Thailand Tokamak 1 and ITER with High Impurity Concentration Scenarios | Thailand |
| TH/P7-12 | S. Cappello Modelling of Basic Physics Issues in Toroidal Pinches and Tools for Performance Control | Italy |
| TH/P7-13 | J. Xu Local Gyro-Landau Fluid Simulations of Toroidal Drift Wave Modes and Drift-Resistive-Inertial Ballooning Modes in Tokamak Plasmas | China, P. R. |
| TH/P7-14 | A. Biancalani Global Gyrokinetic Investigation of Alfvén Instabilities and Turbulence in Tokamaks | Germany |
| TH/P7-15 | M. Lesur Impurity Transport in Collisionless Trapped-Particle-Driven Turbulence | France |
| TH/P7-16 | L. Wang Theory of Electromagnetic Turbulence Driven Intrinsic Current | China, P. R. |
| TH/P7-17 | A. Kuley Kinetic Simulation of Zonal Flow in ADITYA-U Tokamak | India |
| TH/P7-19 | A. K. Singh Investigation of Multiscale Ion Temperature Gradient Instabilities and Turbulence in the ADITYA-U Tokamak | India |
| TH/P7-20 | F. Felici Fast Modelling of Turbulent Transport in Fusion Plasmas using Neural Networks | Netherlands |
| TH/P7-21 | J. Li A Compact Collisionless Gyro-Landau-Fluid Multimode Multiscale Turbulence Transport Modelling in Tokamak Plasmas | China, P. R. |
| TH/P7-23 | M. Leconte Interplay Between Particle Transport, Zonal Flows and Zonal Density in Dissipative Trapped-Electron Mode Turbulence | Korea, Rep. of |
| TH/P7-24 | A. Tykhyi Influence of Radial Electric Field on Stochastic Diffusion in Wendelstein-Type Stellarators | Ukraine |
| TH/P7-25 | I. Ivanova-Stanik Influence of the Impurities in the Hybrid Discharges with High Power in JET ILW | Poland |
| TH/P7-26 | D. I. Palade Turbulent Transport of the W Ions in Tokamak Plasmas | Romania |
| TH/P7-27 | B. J. Sturdevant An Improved Equation-Free Method for Gyrokinetic Profile Evolution of Tokamak Plasmas | USA |

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| TH/P7-28 | P. Maget Collisional Transport and Poloidal Asymmetry Distribution of Impurities in Tokamak Plasmas, with Application to WEST | France |
| TH/P7-29 | M. Baquero-Ruiz Progress in Understanding Suprathermal Ion Transport in a Toroidal Plasma Through Theoretical Modelling and Experiments in TORPEX | Switzerland |
| TH/P7-30 | G. Telesca Impurity Behavior in JET-ILW Plasmas Fuelled with Gas and/or with Pellets: A Comparative Study with the Transport Code COREDIV | Poland |
| TH/P7-31 | S. Coda A Phase-Contrast-Imaging Core Fluctuation Diagnostic and First-Principles Turbulence Modelling for JT-60SA | Switzerland |
| TH/P7-32 | M. Fabbri Application of Jade V&V Capabilities to the New FENDL V3.2 Beta Release | F4E |

EX/6 Transport and Confinement

Chair: Elisabeth Wolfrum (EU)

(14:00 – 16:12)

| | | | |
|-------|----------|--|--------------|
| 14:00 | EX/6-1 | C. Maggi | UK |
| | | Isotope Identity Experiments in JET with ITER-Like Wall | |
| 14:17 | EX/6-2 | K. Ida | Japan |
| | | Transition Between Isotope-Mixing and Nonmixing States in Hydrogen-Deuterium Mixture Plasmas in the Large Helical Device | |
| 14:34 | EX/6-3 | M. N. A. Beurskens | Germany |
| | | Confinement in Electron Heated Plasmas in Wendelstein 7-X and ASDEX-Upgrade: The Necessity to Control Turbulent Transport | |
| 14:51 | EX/6-4 | H. Takahashi | Japan |
| | | Performance Integration of High Temperature Plasmas in the LHD Deuterium Operation | |
| 15:08 | EX/6-5 | A. Melnikov | Russian Fed. |
| | | Evolution of the Electric Potential and Turbulence in OH and ECRH Low-Density Plasmas in the T-10 Tokamak | |
| 15:25 | EX/6-6Ra | A. Marinoni | USA |
| | | Diverted Negative Triangularity Plasmas on DIII-D: The Benefit of High Confinement without the Liability of an Edge Pedestal | |
| | EX/6-6Rb | The Route to High Performance, DEMO Relevant, Negative Triangularity Tokamak Operation on TCV | |

15:42 – 16:12: Discussion

EX/7

Divertor and SOL

Chair: Richard Pitts (ITER)

(16:27 – 18:45)

- | | | | |
|-------|--------|--|--------------|
| 16:27 | EX/7-1 | L. Wang Achievements of Actively Controlled Divertor Detachment Compatible with Sustained High Confinement Core in DIII-D and EAST | China, P. R. |
| 16:44 | EX/7-2 | S. Henderson Experimental Impurity Concentrations Required to Reach Detachment in AUG and JET | UK |
| 17:01 | EX/7-3 | M. Bernert Control of the X-Point Radiator in Fully-Detached ASDEX-Upgrade H-Mode Plasmas | Germany |
| 17:18 | EX/7-4 | M. Jakubowski Overview of the Results from the Divertor Experiments at Wendelstein 7-X and their Implications for Steady State Operation | Germany |
| 17:35 | EX/7-5 | C. Theiler Advances in Understanding Power Exhaust Physics with the New, Baffled TCV Divertor | Switzerland |
| 17:52 | EX/7-6 | H. Wang Synergy Between Divertor Geometry and Drifts on Divertor Power Dissipation in the DIII-D Small Angle Slot Divertor | USA |

18:09 – 18:52: Discussion

| P8 Posters 8 | | (14:00 – 18:45) |
|---------------------|---|------------------------|
| TECH/4-1 | P. Cara IFMIF/EVEDA Project: Achievements and Outlooks Beyond 2020 | Japan |
| TECH/4-2Ra | M. Rieth Increasing Irradiation and Thermo-Hydraulic Performance of Breeding Blankets by ODS Steel Plating | Germany |
| TECH/4-2Rb | E. Simondon Effect of Micro-Alloying and Heat Treatment on the Neutron Irradiation Behavior of Eurofer Type Steels | Germany |
| TECH/4-3 | T. Nozawa Status and the Challenge of Japanese Materials Property Handbook to Facilitate Structural Design Criteria for DEMO In-Vessel Components | Japan |
| TECH/4-4 | J. Rapp The U.S. Approach to Address Plasma-Material Interactions and Fusion Nuclear Science with Linear Plasma Devices | USA |
| TECH/4-5 | A. Lasa A Validated Multiphysics Modelling Approach to Predicting Erosion, Redeposition and Gas Retention in Fusion Tokamak Divertors | USA |
| PD/1-1 | N. Howard Multi-Machine Determination of SOL-to-Core Multi-Z Impurity Transport in Advanced Confinement Regimes | USA |
| PD/1-2 | H. Kim Manufacturing Completion of the First ITER Vacuum Vessel Sector | Korea, Rep. of |
| EX/P8-1 | M. Yoshikawa Study of Detached Plasma Profile in the Divertor Simulation Experimental Module of Gamma 10/PDX | Japan |
| EX/P8-2 | N. Ezumi Plasma Detachment in Gamma 10/PDX Tandem Mirror: Role of Molecule Gases and Target Configuration | Japan |
| EX/P8-3 | L. Laguardia Ammonia Production on Tungsten and Stainless Steel During Nitrogen Seeded H(D) Plasmas in the Linear Plasma Device Gym | Italy |
| EX/P8-4 | I. Garkusha Vapour Shielding of Liquid-Metal CPS Based Targets under ELM-Like and Disruption Transient Loading | Ukraine |
| EX/P8-5 | I. Furno Physics of Negative Ions and Helicon Waves in a Resonant Antenna Plasma Source for Neutral Beams | Switzerland |
| EX/P8-6 | A. K. Sanyasi First Laboratory Observation on Controlled Mitigation of Energetic Electrons by Whistlers | India |

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| EX/P8-7 | M. Nagata Experimental Investigation of Plasmoid Reconnection and Ion Heating During Transient CHI Start-Up on HIST | Japan |
| EX/P8-8 | N. Kenmochi Inward Diffusion Driven by Low Frequency Fluctuations in Self-Organizing Magnetospheric Plasma | Japan |
| TECH/P8-1 | P. Chakraborty Srivastava Compatibility of Conventional and Reduced Activation Ferritic/Martensitic Steels in Liquid Pb-Li: A Comparative Study | India |
| TECH/P8-2 | X. Liu Preparation of the High Heat Flux Materials for CFETR Divertor | China, P. R. |
| TECH/P8-3 | P. Maya Role of PKA Spectrum and PKA Density in Defect Production and Implications for H-Isotope Trapping in Tungsten | India |
| TECH/P8-4 | L. Soto A Repetitive Table-Top Pulsed Plasma Device to Study Materials under Intense Fusion Relevant Pulses | Chile |
| TECH/P8-6 | H. Noto Development of Advanced Dispersion-Strengthened Tungsten Alloys for Divertor Application | Japan |
| TECH/P8-7 | N. Mantel Development and Testing of an Additively Manufactured Lattice for DEMO Limiters | France |
| TECH/P8-8 | V. Chernov Nuclear Physical Properties of Austenitic Chromium-Nickel and Chromium-Manganese Steels under Neutron Irradiation in Nuclear Fast Fission and Fusion Reactors | Russian Fed. |
| TECH/P8-9 | A. Miniyazov Influence of Radiation and Thermal Effects on the Structure and Properties of Tungsten | Kazakhstan |
| TECH/P8-10 | I. Sokolov Purification of Irradiated Beryllium from Radioactive Nuclides using "Dry" Chlorination Method | Kazakhstan |
| TECH/P8-11 | S. Pillai Failure Rate Assessment of IN-RAFM and SS-304 under Conditions Relevant for Fusion Power Reactors | India |
| TECH/P8-14 | Y. Torikai Tritium Retention in Dust Particles and Divertor Tiles of JET Operated with the ITER-Like Wall | Japan |
| TECH/P8-15 | R. Bisson Ammonia Production, Isotopic Exchange and Sticking on Materials Relevant to Fusion Reactors: Tungsten and 316L Stainless Steel | France |

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| TECH/P8-16 | R. Maingi Improved Fusion Plasma Performance in Fusion Devices Enabled by a New Impurity Powder Injection System | USA |
| TECH/P8-17 | H. J. van der Meiden LIBS for Monitoring of Tritium and Impurities in the First Wall of Fusion Devices | Netherlands |
| TECH/P8-18 | X. Courtois Exploitation of Infrared Thermography for WEST Plasma Facing Components Protection During 2019 Campaign | France |
| TECH/P8-19 | Q. Bai Reduced Deuterium Trapping by Plasma-Implanted He Nanobubbles in Radiation Damaged Tungsten | China, P. R. |
| TECH/P8-20 | J. Miyazawa Conceptual Design of the Helical Volumetric Neutron Source FFHR-B2 | Japan |
| TECH/P8-21 | T. Goto Feasibility Study of Tokamak, Helical and Laser Reactors as Affordable Fusion Volumetric Neutron Sources | Japan |
| TECH/P8-22 | S. Sato Conceptual Design of Advanced Fusion Neutron Source (A-FNS) | Japan |
| TECH/P8-23 | K. Kondo Neutron Production Measurement in the 125 MA 5 MeV Deuteron Beam Commissioning of Linear IFMIF Prototype Accelerator (LIPAc) RFQ | Japan |
| TECH/P8-24 | S. Konovalov Tokamak with Reactor Technologies Concept | Russian Fed. |
| TECH/P8-25 | T. Shinya Commissioning of Linear IFMIF Prototype Accelerator (LIPAc) RFQ and RF System towards High Current and High Duty Operation | Japan |
| TECH/P8-26 | A. Tidikas Tritium Production in Activated IFMIF-DONES HFTM | Lithuania |
| TECH/P8-27 | A. Zhirkin Assessment of Radiation Damage of the First Wall of a Fusion Neutron Source DEMO-FNS with a Blanket for Transmutation of Minor Actinides | Russian Fed. |
| TECH/P8-28 | S. Dangtip Human Resource Development and Network for Fusion Research in Thailand and ASEAN | Thailand |
| TECH/P8-29 | S. Kwon A Dynamic Simulation Analysis of the Economic Effects of Fusion Energy in the Future Korean Energy Market | Korea, Rep. of |
| TECH/P8-30 | Z. Ahmad Design of the Magnetic System of Pakistan Spherical Tokamak (PST) for Steady State Operation | Pakistan |

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| TECH/P8-32 | J. C. Fiel Fusion Energy: Prospects to the Future | Brazil |
| TH/P8-1 | M. Schneider Simulation of Heating and Current Drive Sources for Various Scenarios of the ITER Research Plan using the IMAS H&Cd Workflow | France |
| TH/P8-2 | V. Ilgisonis Compact Equations for 3D Plasma Equilibrium | Russian Fed. |
| TH/P8-3 | C. Lee Development of Integrated Suite of Codes and its Validation on KSTAR | Korea, Rep. of |
| TH/P8-4 | N. K. Bisai Studies on Impurity Seeding in a Tokamak Plasma: Simulation and Comparison with ADITYA-U Experiments | India |
| TH/P8-5 | Z.-X. Wang Experimental and Simulation Study of Error Field Penetration on EAST | China, P. R. |
| TH/P8-7 | P. Zheng The Effect of Plasma Current on the Current Drive of Electron Cyclotron Waves | China, P. R. |
| TH/P8-8 | M. Salvador Magnetic Field Studies in Toroidal-Poloidal Systems | Mexico |
| TH/P8-10 | L. Zheng Intermediate N-Mode Stability in the Negative Triangularity Tokamaks | USA |
| TH/P8-11 | J. Lee Impact of the Negative Triangularity Plasma Shape on the $N=0$ Resistive Wall Mode and Vertical Displacement Event of Tokamak | Korea, Rep. of |
| TH/P8-12 | A. Y. Aydemir Effects of Impurity Injection-Site Asymmetries During Disruption Mitigation | Korea, Rep. of |
| TH/P8-13 | J. Mahapatra Magnetic Island Coalescence using Reduced Hall MHD Model | India |
| TH/P8-14 | M. Rajkovic Machine Learning Method for Prediction and Detection of Plasma Confinement States and ELM Activity | Serbia |
| TH/P8-15 | J. Bao Nonlinear Saturation of Toroidal Alfvén Eigenmode by Zonal Fields in DIII-D Plasmas | China, P. R. |
| TH/P8-16 | S. Biswas A Numerical Simulation of Self Consistent Dynamo using a New GPU-Based 3D MHD Solver | India |
| TH/P8-17 | B. F. McMillan Study of Low- N Kinetic Ballooning Modes in Spherical Tokamaks | UK |

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| TH/P8-18 | L. E. Sugiyama Quasi-Interchange Modes and Sawteeth | USA |
| TH/P8-19 | G. J. Choi Linear Excitation and Nonlinear Saturation of Low Frequency Alfvén Eigenmodes in DIII-D | USA |
| TH/P8-20 | J. R. Martin-Solis Formation and Termination of Runaway Beams During Vertical Displacement Events in ITER Disruptions | Spain |
| TH/P8-21 | M. U. Lee Cold-Hot Coupled Waves in a Flowing Magnetized Plasma | Korea, Rep. of |
| TH/P8-22 | I. Palermo Neutronic Design and Assessments of a DCLL BB: Adaptation from DEMO Tokamak to HELIAS Stellarator | Spain |
| TH/P8-23 | J. T. McClenaghan Validation of Pellet Ablation Models and Investigation of Density Fuelling Needs on ITER and CFETR | USA |
| TH/P8-24 | N. Kirneva Modelling of ECRH/ECCD at Different Power Launch Geometry in T-15MD Tokamak | Russian Fed. |

TH/7

Disruptions, Advances in RF Modelling, and Stellarators

Chair: Francesca Poli (USA)

(08:30 – 10:25)

- | | | | |
|-------|----------|--|-------|
| 08:30 | TH/7-1Ra | W. Tang | USA |
| | | Implementation of Artificial Intelligence (AI)/Deep Learning Disruption Predictor into a Plasma Control System | |
| | TH/7-1Rb | A Machine Learning Approach for Data Visualization and Parameter Selection for Efficient Disruption Prediction in Tokamaks | |
| | TH/7-1Rc | In-Depth Research on the Interpretable Disruption Predictor in HL-2A | |
| 08:47 | TH/7-2 | S. Shiraiwa | USA |
| | | Towards Integrated RF Actuator Modelling: Whole Device Scale RF Full-Wave Simulation Including Hot Core and 3D SOL/Antenna Regions | |
| 09:04 | TH/7-3 | J. Coburn | ITER |
| | | Energy Deposition and Melt Deformation on the ITER First Wall due to Disruptions and Vertical Displacement Events | |
| 09:21 | TH/7-4 | J. L. Velasco | Spain |
| | | KNOSOS, A Fast Neoclassical Code for Three-Dimensional Magnetic Configurations | |
| 09:38 | TH/7-5 | M. Sato | Japan |
| | | Supercritical Stability of the Large Helical Device Plasmas due to the Kinetic Thermal Ion Effects | |

09:55 – 10:25: Discussion

EX/8-PD/1 Energetic Particles and Post Deadline

Chair: Xavier Litaudon (EU)

(10:40 – 12:35)

- | | | | |
|-------|--------|--|----------------|
| 10:40 | EX/8-1 | R. Dumont Scenario Preparation for the Observation of Alpha-Driven Instabilities and Transport of Alpha Particles in JET DT Plasmas | France |
| 10:57 | EX/8-2 | C. Collins Improving Fast-Ion Confinement and Performance by Reducing Alfvén Eigenmodes in the $q_{\min} > 2$, Steady-State Scenario | USA |
| 11:14 | EX/8-3 | K. Ogawa A Comprehensive Study of Energetic Particle Transport due to Energetic Particle Driven MHD Instabilities in LHD Deuterium Plasmas | Japan |
| 11:31 | PD/1-1 | N. Howard Multi-Machine Determination of SOL-to-Core Multi-Z Impurity Transport in Advanced Confinement Regimes | USA |
| 11:48 | PD/1-2 | H. Kim Manufacturing Completion of the First ITER Vacuum Vessel Sector | Korea, Rep. of |

12:05 – 12:35: Discussion

| S/1 | | Summary 1 | | (14:00 – 16:00) | |
|------------------------------|-------|---|--|------------------------|-------|
| Chair: Richard Buttery (USA) | | | | | |
| 14:00 | | R. J. Buttery | | | USA |
| | | Introduction | | | |
| 14:05 | S/1-1 | Nuclear Fusion Prize Winners 2019-2020 | | | |
| | | TBA | | | |
| 14:20 | S/1-2 | M. Zarnstorff | | | USA |
| | | Summary: Magnetic Fusion Experiments-1 | | | |
| 14:50 | S/1-3 | G. Saibene | | | F4E |
| | | Summary: Magnetic Fusion Experiments-2 | | | |
| 15:20 | S/1-4 | Y. Kishimoto | | | Japan |
| | | Summary: Magnetic Fusion Theory and Modelling | | | |

| S/2 | | Summary 2 | | (16:00 – 18:00) | |
|------------------------------|-------|-----------------------------------|--|------------------------|--------|
| Chair: Elizabeth Surrey (UK) | | | | | |
| 16:00 | | E. Surrey | | | UK |
| | | Introduction | | | |
| 16:05 | S/2-1 | S. Le Pape | | | France |
| | | Summary: Inertial Fusion Energy | | | |
| 16:35 | S/2-2 | M. Gorley | | | UK |
| | | Summary: Fusion Energy Technology | | | |
| 17:05 | S/2-3 | Announcement FEC-2023 | | | |
| 17:15 | S/2-4 | A. Bécoulet | | | ITER |
| | | Conference Closing | | | |
| 17:20 | S/2-5 | M. Chudakov | | | IAEA |
| | | Closing Address | | | |

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Preparation for Assembly and Commissioning of ITER

B. Bigot¹

¹*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: B. Bigot, bernard.bigot@iter.org

See also Poster OV/1-1: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1335

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of JET Results for Optimizing ITER Operation

J. Mailloux¹

The Jet Contributors

¹*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

Corresponding Author: J. Mailloux, joelle.mailloux@ukaea.uk

See also Poster OV/1-2: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1080

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

DIII-D Research Advancing the Physics Basis for Optimizing the Tokamak Approach to Fusion Energy

M. E. Fenstermacher¹

The DIII-D Team

¹*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: M. E. Fenstermacher, fenstermacher@fusion.gat.com

See also Poster OV/1-3: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0686

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advances in the Long-Pulse Steady-State High- β H-Mode Scenario with Active Controls of Divertor Heat and Particle Fluxes on EAST

B. Wan¹, Y. Liang², X. Gong¹, N. Xiang¹, G. Xu¹, Y. Sun¹, L. Wang¹, J. Qian¹, R. Ding¹, H. Liu¹, B. Zhang¹, L. Zeng¹, L. Zhang¹, X. Zhang¹, B. Ding¹, Q. Zang¹, B. Lyu¹, M. H. Li¹, F. Ding¹, Z. Luo¹, J. Huang¹, T. Zhang¹, Y. Zhang¹, G. Li¹, and T. Xia¹

The EAST (HT-7U) Team and Collaborators

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Forschungszentrum Jülich GmbH, Jülich, Germany*

Corresponding Author: B. Wan, bnwan@ipp.ac.cn

See also Poster OV/1-4: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1020

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Operating a Full Tungsten Actively Cooled Tokamak: Overview of WEST First Phase of Operation

J. Bucalossi¹

The WEST (Tore Supra) Team

¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: J. Bucalossi, jerome.bucalossi@cea.fr

See also Poster OV/2-1: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1038

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress from ASDEX-Upgrade Experiments in Preparing the Physical Basis of ITER Operation and DEMO Scenario Development

U. Stroth¹

The ASDEX-Upgrade and EUROfusion MST1 Teams

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: U. Stroth, stroth@ipp.mpg.de

See also Poster OV/2-2: [OVP Monday](#)

Synopsis: via Indico server: [IAEA-CN-286-1046](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of KSTAR

S.-W. Yoon¹, J.-G. Kwak¹, W. C. Kim¹, W. H. Ko¹, M. J. Choi¹, H. Lee¹, B.-H. Park¹,
G. Park¹, J. Chung¹, H. Han¹, Y. In², and H. K. Park²

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

Corresponding Author: S.-W. Yoon, swyoon@nfri.re.kr

See also Poster OV/2-3: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1230

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Completion of JT-60SA Construction and Contribution to ITER

Y. Kamada¹, E. DiPietro², M. Hanada¹, P. Barabaschi², S. Ide¹, S. Davis², M. Yoshida¹, and G. Giruzzi³

The JT-60SA Team

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

²*F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain*

³*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: Y. Kamada, kamada.yutaka@qst.go.jp

See also Poster OV/2-4: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0731

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advances in Prediction of Tokamak Experiments with Theory-Based Models

G. M. Staebler¹

¹*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: G. M. Staebler, gary.staebler@ga.com

See also Poster OV/2-5: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0642

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress in the U.S. Inertial Confinement Fusion Program

P. Patel¹

¹*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: P. Patel, patel9@llnl.gov

See also Poster OV/3-1: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1168

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Confirmation of Efficient Island Divertor Operation and Successful Neoclassical Transport Optimization in Wendelstein 7-X

T. S. Pedersen¹

The Wendelstein 7-X Team

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: T. S. Pedersen, tspe@ipp.mpg.de

See also Poster OV/3-2: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1153

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Results of Deuterium Experiment on the Large Helical Device and its Contribution to the Fusion Reactor Development

H. Takahashi¹, H. Yamada², K. Ida¹, K. Nagasaki³, K. Tanaka¹, K. Mukai¹, K. Ogawa¹, M. Kobayashi¹, **M. Osakabe**¹, M. Isobe¹, M. Sakamoto⁴, S. Murakami⁵, S. Ohdachi¹, S. Inagaki⁶, S. Kamio¹, S. Masuzaki¹, T. Kobayashi¹, T. Morisaki¹, and Y. Suzuki¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²University of Tokyo, Tokyo, Japan

³Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁴Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan

⁵Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁶Kyushu University, Kasuga, Japan

Corresponding Author: H. Takahashi, takahashi.hiromi@lhd.nifs.ac.jp

Presenting Author: M. Osakabe

See also Poster OV/3-3: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0894

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improving the Stellarator Through Theoretical Understanding

C. C. Hegna¹, D. T. Anderson¹, A. Bader¹, A. Bhattacharjee², M. D. J. Cole², M. Drevlak³,
J. M. Duff¹, B. J. Faber¹, S. R. Hudson², M. T. Kotschenreuther⁴, T. Kruger¹,
M. Landreman⁵, I. J. McKinney¹, E. Paul⁵, M. J. Poeschel⁴, J. S. Schmitt⁶, P. W. Terry¹,
A. S. Ware⁷, M. Zarnstorff², and C. Zhu²

¹University of Wisconsin-Madison, Madison, WI 53706, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁴University of Texas at Austin, Austin, TX 78712, USA

⁵University of Maryland, College Park, MD 20742, USA

⁶Auburn University, Auburn, AL 36849, USA

⁷University of Montana, Missoula, MT 59812, USA

Corresponding Author: C. C. Hegna, cchegna@wisc.edu

See also Poster OV/3-4: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0812

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of the TJ-II Stellarator Research Programme towards Model Validation in Fusion Plasmas

C. Hidalgo¹

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

Corresponding Author: C. Hidalgo, carlos.hidalgo@ciemat.es

See also Poster OV/3-5: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0969

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Accelerating Magnetically Confined Fusion Through Advancements in Edge Turbulence Modelling and its Integration in a Whole Device Model

A. Bhattacharjee¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: A. Bhattacharjee, amitava@pppl.gov

See also Poster OV/4-1: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1357

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of the TCV Tokamak Experimental Programme

H. Reimerdes¹

The TCV and EUROfusion MST1 Teams

¹*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

Corresponding Author: H. Reimerdes, holger.reimerdes@epfl.ch

See also Poster OV/4-2: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1095

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress of HL-2A Experiment and HL-2M Program

X. Duan¹, M. Xu¹

On Behalf of SWIP and Collaborators

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: X. Duan, duanxr@swip.ac.cn

See also Poster OV/4-3: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1200

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of Recent Experimental Results from the ADITYA-U Tokamak

R. L. Tanna¹, J. Ghosh¹, R. Kumar¹, T. Macwan¹, H. Raj¹, S. Aich¹, K. Jadeja¹, K. Patel¹, K. Singh¹, S. Dolui¹, D. Varia¹, D. Sadharakiya¹, B. K. Shukla¹, P. K. Chattopadhyay¹, M. M. Makwana¹, K. S. Shah¹, S. Gupta¹, B. V. Nair¹, C. N. Gupta¹, V. K. Panchal¹, P. Edappala², B. Arambhadiya¹, M. Shah¹, P. Gautam¹, R. Raulji¹, P. K. Shukla¹, R. Rajpal¹, N. Yadava², S. Patel³, N. K. Ramaiya¹, M. B. Chowdhuri¹, R. Manchanda¹, R. Dey¹, G. Shukla³, K. Shah³, N. K. Bisai¹, P. Atrey¹, S. K. Pathak¹, U. K. Nagora¹, K. Patel¹, V. Siju¹, J. Raval¹, S. Purohit¹, M. Kumar¹, K. Tahiliani¹, D. Kumawat¹, S. K. Jha¹, M. V. Gopalakrishna¹, D. Raju¹, Y. Saxena¹, A. Sen¹, R. Pal⁴, and S. Chaturvedi¹

¹Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

²Gujarat University, Navrangpura, Ahmedabad 380 009, India

³Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India

⁴Saha Institute of Nuclear Physics, Kolkata, India

Corresponding Author: R. L. Tanna, rakesh@ipr.res.in

See also Poster OV/4-4: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-1267

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of Coordinated Spherical Tokamak Research in Japan

Y. Takase¹, A. Ejiri², T. Fujita³, K. Hanada⁴, H. Idei⁴, M. Nagata⁵, T. Onchi⁶, Y. Ono¹,
H. Tanaka⁷, N. Tsujii¹, M. Uchida⁷, K. Yasuda³, Y. Kamada⁸, H. Kasahara⁹, S. Murakami¹⁰,
Y. Takeiri⁹, Y. Todo⁹, and S. Tsuji-Iio¹¹

¹University of Tokyo, Tokyo, Japan

²Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

³Nagoya University, Nagoya, Japan

⁴Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan

⁵University of Hyogo, Kobe, Hyogo, Japan

⁶Kyushu University, Kasuga, Japan

⁷Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁸Japan Atomic Energy Agency (JAEA), Japan

⁹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

¹⁰Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

¹¹Tokyo Institute of Technology, Tokyo, Japan

Corresponding Author: Y. Takase, takase@k.u-tokyo.ac.jp

See also Poster OV/4-5Ra: [OVP Monday](#)

Synopsis: via Indico server: [IAEA-CN-286-0693](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent NSTX-U Theory, Modelling and Analysis Results

W. Guttenfelder¹

The NSTX-U Research and Recovery Teams

Rapporteured by: **Y. Takase**

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: W. Guttenfelder, wgutten@pppl.gov

See also Poster OV/4-5Rb: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0935

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of Globus-M2 Spherical Tokamak Results at the Enhanced Values of Magnetic Field and Plasma Current

Y. Petrov¹, V. Gusev¹, N. Sakharov¹, V. Minaev¹, V. Varfolomeev¹, V. Dyachenko¹, I. Balachenkov¹, N. Bakharev¹, E. Bondarchuk², V. Bulanin³, F. Chernyshev¹, M. Iliasova¹, A. A. Kavin², E. Khilkevitch¹, N. Khromov¹, E. Kiselev¹, A. Konovalov¹, V. Kornev¹, S. Krikunov¹, G. Kurskiev¹, A. Melnik¹, M. Mironov¹, I. Mirosnikov¹, A. Novokhatsky¹, N. Zhiltsov¹, E. Mukhin¹, M. Patrov¹, A. Petrov³, V. Rozhansky³, I. Senichenkov³, K. Shulyatiev¹, P. Shchegolev¹, A. Shevelev¹, A. Telnova¹, N. Teplova¹, E. Tukhmeneva¹, V. Tokarev¹, S. Tolstyakov¹, G. Troshin¹, E. Vekshina³, A. Voronin¹, A. Yashin³, P. Bagryansky⁴, A. Solomatin⁴, and E. Zhilin⁵

Rapporteured by: Y. Takase

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

²*D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation*

³*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

⁴*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

⁵*Ioffe Fusion Technology Ltd., St. Petersburg, Russian Federation*

Corresponding Author: Y. Petrov, yu.petrov@mail.ioffe.ru

See also Poster OV/4-5Rc: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0673

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experiments on ST40 towards Burning Plasma Conditions

M. Gryaznevich¹

Rapporteured by: Y. Takase

¹*Tokamak Energy Ltd, Abingdon, UK*

Corresponding Author: M. Gryaznevich, mikhail.gryaznevich@tokamakenergy.co.uk

See also Poster OV/4-5Rd: OVP Monday

Synopsis: via Indico server: IAEA-CN-286-0915

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of the COMPASS Results

M. Hron¹

The COMPASS Team

¹*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

Corresponding Author: M. Hron, hron@ipp.cas.cz

Synopsis: via Indico server: IAEA-CN-286-1360

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of the FTU Results

G. Pucella¹

¹ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

Corresponding Author: G. Pucella, gianluca.pucella@enea.it

Synopsis: via Indico server: IAEA-CN-286-0884

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Fusion Technology Development to Ensure ITER Deliverables: Indian Experience

M. Singh¹, U. Baruah², A. K. Chakraborty^{2,3}, G. Gupta², A. Kumar², V. K. Srivastava²,
A. Mukherjee³, H. K. Pandya³, S. Padasalagi^{2,3,4}, S. L. Rao², N. P. Singh², R. G. Trivedi^{2,3},
H. Vaghela², and I. Bandyopadhyay^{2,3}

¹ITER, Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

²International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India

³Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

⁴Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India

Corresponding Author: M. Singh, mahendrajit@iter-india.org

Synopsis: via Indico server: IAEA-CN-286-1341

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of the SPARC Physics Basis towards the Exploration of Burning-Plasma Regimes in High-Field, Compact Tokamaks

P. Rodriguez Fernandez¹, A. Creely², M. Greenwald¹, N. Howard¹, J. W. Hughes¹, A. Kuang¹, S. Scott², J. Wright¹, C. Holland³, Y. Lin¹, S. Wukitch¹, F. M. Poli⁴, D. Brunner², R. Mumgaard², and D. Whyte¹

The SPARC Team

¹Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

²Commonwealth Fusion Systems, Cambridge, MA 02139, USA

³University of California San Diego, CA 92093, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: P. Rodriguez Fernandez, pablorf@mit.edu

Synopsis: via Indico server: IAEA-CN-286-0856

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Progress and Upgrade Plan of KTX Reversed Field Pinch

T. Lan¹, W. Mao¹, J. Xie¹, H. Li¹, A. Liu¹, S. Wan¹, H. Wang¹, Z. Wei¹, X. Wen¹, H. Zhou¹, Z. Wu¹, Z. Liu¹, J. Zheng¹, P. Yuan¹, K. Song¹, Z. Li¹, H. Xu¹, J. Zhu¹, T. Deng¹, S. Zhang¹, Y. Adil¹, J. Hu¹, S. Zhang², P. Fu², L. Yang², Y. Song², Q. Ren³, Y. Wang³, M. Xu³, X. Duan³, C. Xiao⁴, W. Ding¹, G. Zhuang¹, and W. Liu¹

¹University of Science and Technology of China, Hefei, Anhui, People's Republic of China

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

⁴Plasma Physics Laboratory, University of Saskatchewan, SK S7N-5C9, Canada

Corresponding Author: T. Lan, lantao@ustc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1194

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advances in Physics and Applications of 3D Magnetic Perturbations on the J-TEXT Tokamak

N. Wang¹, Y. Liang^{1,2,3}, Y. Ding¹, Z. Chen¹, Z. Chen¹, Z. Yang¹, D. Xia¹, W. Zheng¹, Z. Jiang¹, L. Wang¹, B. Rao¹, Q. Hu⁴, X. Zhang⁵, W. Yan¹, J. Zhang¹, X. Chen¹, X. Xu¹, T. Xu¹, X. Xie¹, T. Wang¹, D. Li¹, Y. He¹, L. Liu⁶, J. Li⁵, D. Han¹, S. Zhou¹, R. Tong¹, Z. Lin¹, Y. Wei¹, X. Zhang¹, P. Shi¹, Z. Cheng¹, W. Guo¹, P. Zhu¹, M. Liu¹, S. Ma¹, Y. Yang¹, C. Li¹, L. Gao¹, Z. Wang¹, M. Zhang¹, K. Yu¹, X. Hu¹, Q. Yu⁷, K. Gentle⁸, and Y. Pan¹

The J-TEXT Team

¹*Huazhong University of Science and Technology, Hubei, People's Republic of China*

²*Forschungszentrum Jülich GmbH, Jülich, Germany*

³*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China*

⁶*China Academy of Engineering Physics (CAEP), Mianyang, People's Republic of China*

⁷*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁸*Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA*

Corresponding Author: N. Wang, wangnc@hust.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1203

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

An Overview of Magneto-Inertial Fusion on the Z-Machine at Sandia National Laboratories

D. A. Yager-Elorriaga¹, M. R. Gomez¹, S. A. Slutz¹, C. A. Jennings¹, D. J. Ampleford¹, M. R. Weis¹, C. E. Myers¹, K. Hahn², S. B. Hansen¹, E. C. Harding¹, A. J. Harvey-Thompson¹, D. C. Lamppa¹, M. Mangan¹, P. F. Knapp¹, T. J. Awe¹, G. A. Chandler¹, G. W. Cooper^{1,3}, J. R. Fein¹, M. Geissel¹, M. E. Glinsky¹, W. E. Lewis¹, C. L. Ruiz¹, D. E. Ruiz¹, M. E. Savage¹, P. F. Schmit¹, I. C. Smith¹, J. D. Styron³, D. Strozzi², B. Pollock², J. Moody², J. R. Davies⁴, D. H. Barnak⁴, R. Betti⁴, E. M. Campbell⁴, A. B. Sefkow⁴, M. Wei⁴, J. J. Porter¹, B. Jones¹, T. R. Mattsson¹, K. J. Peterson¹, G. A. Rochau¹, and D. B. Sinars¹

¹*Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA*

²*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

³*University of New Mexico, Albuquerque, NM 87131, USA*

⁴*Laboratory for Laser Energetics, University of Rochester, Rochester, NY 14623, USA*

Corresponding Author: D. A. Yager-Elorriaga, dayager@sandia.gov

Synopsis: via Indico server: IAEA-CN-286-1217

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Latest Results of EUROfusion Plasma-Facing Components Research in the Areas of Power Loading, Material Erosion and Fuel Retention

M. Reinhart¹, S. Brezinsek², J. W. Coenen², T. Schwarz-Selinger³, K. Schmid³,
A. Kirschner², A. Hakola⁴, H. J. van der Meiden⁵, R. Dejarnac⁶, E. Tsitrone⁷, R. Doerner⁸,
M. Baldwin⁸, and D. Nishijima⁸

¹EUROfusion Consortium, 85748 Garching, Germany

²Forschungszentrum Jülich GmbH, Jülich, Germany

³Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁴VTT Technical Research Centre of Finland Ltd., Espoo, Finland

⁵Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁶Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

⁷Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁸University of California San Diego, CA 92093, USA

Corresponding Author: M. Reinhart, michael.reinhart@euro-fusion.org

Synopsis: via Indico server: IAEA-CN-286-1225

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Physics Studies of ADITYA & ADITYA-U Tokamaks Plasmas using Spectroscopic Diagnostics

R. Manchanda¹, M. B. Chowdhuri¹, J. Ghosh¹, N. K. Ramaiya¹, N. K. Ramaiya¹,
N. Yadava², S. Patel³, G. Shukla³, K. Shah³, R. Dey¹, A. Bhattacharya⁴, A. Kanik⁴,
S. Banerjee⁵, K. Jadeja¹, K. Patel¹, R. L. Tanna¹, S. K. Pathak¹, V. Balakrishnan¹, and
C. N. Gupta¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Gujarat University, Navrangpura, Ahmedabad 380 009, India*

³*Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India*

⁴*Indian Institute of Technology, Kanpur, Uttar Pradesh, India*

⁵*College of William & Mary, Williamsburg, VA 23185, USA*

Corresponding Author: R. Manchanda, mranjana@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1282

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

EX: Magnetic Fusion Experiments

Doubling the Efficiency of Off-Axis Current Drive using Reactor-Relevant ‘Top Launch ECCD’ on the DIII-D Tokamak

X. Chen¹, C. C. Petty¹, J. Lohr¹, D. Su¹, R. Prater¹, M. Cengher¹, M. Austin², Y. Gorelov¹, C. T. Holcomb³, L. Lao¹, D. Ponce¹, J. M. Park⁴, R. Pinsker¹, B. Victor³, and L. Zeng⁵

¹General Atomics, San Diego, CA 92186, USA

²University of Texas at Austin, Austin, TX 78712, USA

³Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁴Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁵University of California Los Angeles, CA 90095, USA

Corresponding Author: X. Chen, chenxi@fusion.gat.com

See also Poster EX/1-1: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–0859

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Integrated Scenario Development at JET for DT Operation and ITER Risk Mitigation

J. Garcia¹, F. J. Casson², C. Challis³, D. Frigione⁴, D. Van Eester⁵, L. Garzotti^{2,3}, J. Hobirk⁶, A. Kappatou⁶, E. A. Lerche⁷, J. Mailloux², and F. Rimini²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

³*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁴*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

⁵*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

⁶*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁷*LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium*

Corresponding Author: J. Garcia, jeronimo.garcia@cea.fr

See also Poster EX/1-2: P3 Wednesday

Synopsis: via Indico server: IAEA–CN–286–0989

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Low Plasma Current (~ 8 MA) Approach for ITER'S $Q=10$ Goal

S. Ding^{1,2}, A. M. Garofalo³, J. T. McClenaghan¹, T. Odstrcil⁴, H. Wang³, L. Wang²,
M. T. Kotschenreuther⁵, B. A. Grierson⁶, X. Gong², D. Weisberg³, D. Eldon³, J. Qian², and
J. Huang²

¹Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³General Atomics, San Diego, CA 92186, USA

⁴Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁵Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: S. Ding, dingsiye@fusion.gat.com

See also Poster EX/1-3R: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-0931

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

EAST Steady-State Long Pulse H-Mode with Core-Edge Integration for CFETR

X. Gong¹, A. M. Garofalo², J. Huang¹, J. Qian¹, A. Ekedahl³, R. Maingi⁴, F. Liu¹, Y. Zhao¹, B. Xiao¹, J. Hu¹, C. Hu¹, L. Hu¹, M. Wang¹, H. Xu¹, E. Li¹, L. Zeng¹, Q. Zang¹, H. Liu¹, B. Lyu¹, Q. Yuan¹, K. Li¹, B. Zhang¹, X. Gu¹, J. Zhang¹, T. Jia¹, M. Wu¹, J. Chen¹, X. Zhu¹, M. H. Li¹, X. Zhang¹, L. Zhang¹, Y. Duan¹, L. Wang¹, R. Ding¹, Y. Sun¹, G. Xu¹, Y. Liang⁵, N. Xiang¹, B. Wan¹, and J. Li¹

The EAST (HT-7U) Team

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

³*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*Forschungszentrum Jülich GmbH, Jülich, Germany*

Corresponding Author: X. Gong, xz_gong@ipp.ac.cn

See also Poster EX/1-4: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–1048

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

New Understanding of Multiscale/Multifield Pedestal Turbulence, Transport, and Gradient Behavior During Type-I ELMs on the DIII-D Tokamak

K. K. Barada¹, T. Rhodes¹, S. Haskey², R. J. Groebner³, S. Banerjee⁴, A. Diallo²,
F. M. Laggner², Z. Yan⁵, L. Zeng¹, and G. Wang¹

¹University of California Los Angeles, CA 90095, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³General Atomics, San Diego, CA 92186, USA

⁴College of William & Mary, Williamsburg, VA 23185, USA

⁵University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: K. K. Barada, kshitish@ucla.edu

See also Poster EX/2-1: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0951

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of the Separatrix Density in the Pedestal Performance in JET-ILW and JET-C

L. Frassinetti¹, B. Chapman², G. T. A. Huijsmans³, J. Hillesheim², S. Saarelma², C. Maggi², S. Pamela^{2,4}, A. Field², A. Fil^{2,4}, C. Roach², D. Hatch⁵, and C. Perez von Thun⁶

¹KTH Royal Institute of Technology, Stockholm, Sweden

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA

⁶Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

Corresponding Author: L. Frassinetti, lorenzo.frassinetti@ee.kth.se

See also Poster EX/2-2: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1050

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

L-H Transition Studies at JET: H, D, He and T

E. R. Solano¹, G. Birkenmeier², E. Delabie³, C. Silva⁴, J. Hillesheim⁵, S. Aleiferis⁵, A. Baciero⁶, I. Balboa⁵, A. Boboc⁵, C. Bourdelle⁷, I. Carvalho⁸, P. Carvalho⁹, M. Chernyshova¹⁰, T. Craciunescu¹², E. de la Luna¹, J. Flanagan⁵, J. M. Fontdecaba¹, C. Giroud⁵, R. Henriques⁹, J. Ionut¹², A. Kappatou², D. King¹³, M. Lennholm¹⁴, E. A. Lerche¹⁵, L.-S. Edward⁵, A. Loarte¹⁶, C. Maggi⁵, A. Manzanares⁶, M. Maslov¹³, R. B. Morales⁵, A. H. Nielsen¹⁷, D. Nina⁹, V. Parail⁵, F. Parra¹⁸, E. Pawelec¹⁹, U. Plank², J. Rasmussen¹⁷, F. Rimini¹³, M. Sertoli⁵, A. Shaw⁵, S. Silburn¹³, Ž. Štancar⁵, H. Sun⁵, G. Szepesi¹³, E. Tholerus²⁰, S. Vartanian²¹, G. Verdoolaege²², and P. Vincenzi²³

The Jet Contributors

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁷Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁸Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

⁹Institute of Plasmas and Nuclear Fusion (IPFN), Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

¹⁰Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

¹²National Institute of Laser, Plasma and Radiation Physics (INFLPR), Bucharest, Romania

¹³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

¹⁴European Commission, Brussels, Belgium

¹⁵Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

¹⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

¹⁷Technical University of Denmark (DTU), Copenhagen, Denmark

¹⁸University of Oxford, Oxford, UK

¹⁹University of Opole, 45-052 Opole, Poland

²⁰KTH Royal Institute of Technology, Stockholm, Sweden

²¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²²Ghent University, 9000 Ghent, Belgium

²³Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

Corresponding Author: E. R. Solano, emilia.solano@ciemat.es

See also Poster EX/2-3: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1060

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

RMP Induced H-Mode Transition During Divertor Detachment with Enhanced Edge Radiation in Deuterium Plasmas in LHD

M. Kobayashi¹, R. Seki¹, Y. Hayashi¹, Y. Takemura¹, S. Morita¹, K. Mukai¹, T. Oishi¹,
Y. Narushima¹, K. Tanaka¹, T. Tokuzawa¹, and S. Masuzaki¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: M. Kobayashi, kobayashi.masahiro@nifs.ac.jp

See also Poster EX/2-4: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0837

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Developments towards an ELM-Free DEMO Pedestal Radiative Cooling Scenario in ASDEX-Upgrade

A. Kallenbach¹, R. Dux¹, M. Bernert¹, P. David¹, E. Fable¹, L. Gil², T. Görler¹, R. M. McDermott¹, V. Rohde¹, W. Suttrop¹, G. Tardini¹, and M. Wischmeier¹

The ASDEX-Upgrade and EUROfusion MST1 Teams

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

Corresponding Author: A. Kallenbach, arne.kallenbach@ipp.mpg.de

See also Poster EX/2-5: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0741

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of an Integrated Core-Edge Scenario using the Super H-Mode

T. Wilks¹, P. B. Snyder², M. Knolker³, D. Eldon², T. E. Evans², A. M. Garofalo², B. A. Grierson⁴, J. Hanson⁵, A. E. Järvinen⁶, F. M. Laggner⁴, C. Lasnier⁶, A. G. McLean⁶, J. T. McClenaghan³, T. Osborne², T. W. Petrie², S. Saarelma⁷, and W. M. Solomon²

¹Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

²General Atomics, San Diego, CA 92186, USA

³Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵Columbia University, New York, NY 10027, USA

⁶Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁷Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: T. Wilks, twilks@psfc.mit.edu

See also Poster EX/2-6: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0863

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Investigation and Gyrokinetic Simulations of Multiscale Electron Heat Transport in JET, AUG and TCV

A. Mariani¹, N. Bonanomi², P. Mantica³, C. Angioni², F. J. Casson⁴, J. Citrin⁵, T. Görler², D. Keeling⁶, E. A. Lerche⁷, O. Sauter⁸, M. Sertoli², G. M. Staebler⁹, D. Taylor⁶, and A. Thorman⁶

The Jet Contributors and EUROfusion MST1 Team,
The ASDEX-Upgrade and TCV Teams,
The ITPA Transport & Confinement Group

¹Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

⁶Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁷Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

⁸Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁹General Atomics, San Diego, CA 92186, USA

Corresponding Author: A. Mariani, alberto.mariani@istp.cnr.it

See also Poster EX/3-1: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0966

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Exploring the Physics of a High-Performance H-Mode with Small ELMs and Zero Gas Puffing in JET-ILW

E. de la Luna¹, M. Sertoli², J. Garcia³, L. Garzotti², F. Auriemma⁴, F. J. Casson², E. Delabie⁵, L. Frassinetti⁶, B. Lomanowski⁵, P. Lomas², S. Menmuir², R. Otin², F. Rimini², S. Silburn², P. Sirén⁷, E. R. Solano¹, C. Sozzi⁸, Ž. Štancar⁹, G. Szepesi², A. Thorman², and D. Van Eester¹⁰

The Jet Contributors

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁵Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁶KTH Royal Institute of Technology, Stockholm, Sweden

⁷Aalto University, Espoo, Finland

⁸Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

⁹Jožef Stefan Institute, 1000 Ljubljana, Slovenia

¹⁰Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

Corresponding Author: E. de la Luna, elena.delaluna@ciemat.es

See also Poster EX/3-2: P3 Wednesday

Synopsis: via Indico server: [IAEA-CN-286-1094](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Evidence of Magnetic Flux Pumping at ASDEX-Upgrade

A. Burckhart¹, A. Bock¹, R. Fischer¹, I. Krebs², A. Gude¹, M. Hölzl¹, V. Igochine¹,
T. Pütterich¹, and J. Stober¹

The ASDEX-Upgrade Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

Corresponding Author: A. Burckhart, andreas.burckhart@ipp.mpg.de

See also Poster EX/4-1: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1037

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Influence of Large Magnetic Island Structures on Turbulence and Quasi-Coherent Modes in Tokamak Plasmas

M. Jiang¹, Y. Xu², W. Zhong¹, Z. Shi¹, Y. Ding³, Z. Chen³, Z. Yang³, Z. Chen³, N. Wang³, D. Li³, W. Chen¹, J. Li¹, X. Ding¹, X. Ji¹, Z. Yang¹, J. Wen¹, A. Liang¹, K. Fang¹, Y. Liu¹, Q. W. Yang¹, and M. Xu¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Southwest Jiaotong University, Chengdu, Sichuan, People's Republic of China

³Huazhong University of Science and Technology, Hubei, People's Republic of China

Corresponding Author: M. Jiang, jiangm@swip.ac.cn

See also Poster EX/4-2: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1237

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Quasi-Symmetric Error Field Correction in Tokamaks

J.-K. Park¹, N. Logan¹, S. Yang¹, Q. Hu¹, C. Zhu¹, M. Zarnstorff¹, C. Paz-Soldan²,
E. Strait², T. Markovic³, Y. M. Jeon⁴, and W. H. Ko⁴

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

⁴*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: J.-K. Park, jpark@pppl.gov

See also Poster EX/4-3: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0928

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Integrated ELM and Divertor Flux Control using RMPs with Low Input Torque in EAST in Support of the ITER Research Plan

A. Loarte¹, Y. Sun², M. Jia², Q. Ma², H.-H. Wang², B. Zhang², L. Wang², J. Xu², L. Meng², K. Li², Q. Zang², Y. Wang², L. Zhang², T. Shi², C. Paz-Soldan³, B. Shen², and B. Wan²

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³General Atomics, San Diego, CA 92186, USA

Corresponding Author: A. Loarte, alberto.loarte@iter.org

See also Poster EX/4-4Ra: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0809

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First Demonstration of Full ELM Suppression in Low Input Torque Plasmas for ITER using $N=4$ RMP in EAST

Y. Sun¹, Q. Ma¹, M. Jia¹, S. Gu², Y. Liang³, A. Loarte⁴, H.-H. Wang¹, W. Guo¹, Y. Liu⁵, C. Paz-Soldan⁵, J. Qian¹, B. Shen¹, T. Shi¹, B. Wan¹, D. Weisberg⁵, and L. Zeng¹

Rapporteur by: **A. Loarte**

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA*

³*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁴*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁵*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: Y. Sun, ywsun@ipp.ac.cn

See also Poster EX/4-4Rb: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1067

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Toward Holistic Understanding of the ITER-Like RMP ELM Control on KSTAR

Y. In¹, H. Lee², G. Park², Y. M. Jeon², M. Kim², K. Kim², J.-K. Park³, S. Yang³, A. Loarte⁴, Y. Liu⁵, and H. K. Park¹

The 3D Physics Task Force in KSTAR

¹*Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁴*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁵*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: Y. In, inyongkyoon@unist.ac.kr

See also Poster EX/4-5Ra: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0772

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Edge Fluctuation Dynamics in RMP-Driven ELM Suppression and ELM-Free H-Mode Plasma in KSTAR

J. Lee¹, Y. M. Jeon¹, Y. In², G. Park¹, M. J. Choi¹, G. Yun³, M. Kim², J. Kim¹, Y.-C. Ghim⁴,
J. Kim⁴, J. H. Lee¹, W. H. Ko¹, and H. K. Park²

Rapporteured by: **Y. In**

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

³Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Republic of Korea

⁴Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

Corresponding Author: J. Lee, jaehyun@nfri.re.kr

Presenting Author: Y. In

See also Poster EX/4-5Rb: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1269

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

First Observation of ELM Suppression without Confinement Degradation due to Geodesic Acoustic Mode (GAM)-Like Mode Triggered by Boron Powder Injection

A. Diallo¹, A. Bortolon¹, A. Nagy¹, C. Chen², C. Zhou², D. Mansfield¹, G. Zuo², H. Liu², J. Hu², J. Qian², K. Tritz³, L. Zhang², Q. Zang², R. Maingi¹, R. Hager¹, W. Xu², X. Gong², Y. Ye², Y. Duan², Y. Wang², Y. Wang², and Z. Sun¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Johns Hopkins University, Baltimore, MD 21218, USA

Corresponding Author: A. Diallo, adiallo@pppl.gov

See also Poster EX/4-6: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1167

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Shattered Pellet Injection Experiments at JET in Support of the ITER Disruption Mitigation System Design

S. Jachmich¹, U. Kruezi¹, M. Lehnen¹, M. Baruzzo², L. R. Baylor³, D. Carnevale⁴, D. Craven⁵, N. Eidiotis⁶, O. Ficker⁷, T. Gebhart³, S. Gerasimov⁵, J. Herfindal³, E. M. Hollmann⁸, A. Huber⁹, P. Lomas⁵, J. Lovell³, A. Manzanares¹⁰, M. Maslov¹¹, J. Mylnar⁷, G. Pautasso¹², C. Paz-Soldan⁶, A. Peacock¹³, V. V. Plyusnin¹⁴, M. Reinke³, C. Reux¹⁵, F. Rimini¹⁶, U. Sheikh¹⁷, D. Shiraki³, S. Silburn¹⁶, R. Sweeney¹⁸, J. Wilson⁵, S. Hacquin¹⁵, H.-T. Kim¹⁹, and E. Joffrin¹⁹

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Università di Tor Vergata, 00173 Rome, Italy

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶General Atomics, San Diego, CA 92186, USA

⁷Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

⁸University of California San Diego, CA 92093, USA

⁹Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

¹⁰Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹¹Culham Science Centre, Abingdon, UK

¹²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

¹³JET Exploitation Unit, Culham Science Centre, Abingdon, UK

¹⁴Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁵Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

¹⁶United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

¹⁷École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

¹⁸Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

¹⁹EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK

Corresponding Author: S. Jachmich, stefan.jachmich@iter.org

See also Poster EX/5-1Ra: P3 Wednesday

Synopsis: via Indico server: IAEA–CN–286–1220

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

DIII-D and International Research towards Extrapolating Shattered Pellet Injection Performance to ITER

D. Shiraki¹, J. Herfindal¹, L. R. Baylor¹, E. M. Hollmann², C. Lasnier³, I. Bykov², N. Eidiets⁴, R. Raman⁵, R. Sweeney⁶, U. Sheikh⁷, S. Gerasimov⁸, S. Jachmich⁹, E. Joffrin¹⁰, M. Lehnen⁹, C. Reux¹⁰, J. Kim¹¹, J. J. Jang¹¹, S. Meitner¹, and T. Gebhart¹

The Jet Contributors and KSTAR Team

¹Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

²University of California San Diego, CA 92093, USA

³Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵University of Washington, Seattle, WA 98195, USA

⁶Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁷École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁸Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

¹⁰Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

¹¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

Corresponding Author: D. Shiraki, shirakid@ornl.gov

See also Poster EX/5-2Ra: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–0945

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

A Novel Path to Runaway Electron Mitigation via Deuterium Injection and Current-Driven Kink Instability

C. Paz-Soldan¹, Y. Liu¹, C. Reux², D. Del-Castillo-Negrete³, N. Eidielis¹, S. Gerasimov⁴, S. Silburn⁵, D. Spong³, P. Aleynikov⁶, K. Aleynikova⁷, L. Bardoczi¹, L. R. Baylor³, D. Carnevale⁸, E. M. Hollmann⁹, S. Jachmich¹⁰, E. Joffrin¹¹, M. Lehnen¹², A. Lvovskiy¹³, O. Ficker¹⁴, E. Macusoca¹⁴, A. Manzanares¹⁵, G. Papp⁶, G. Pautasso⁶, F. Rimini⁵, D. Shiraki³, C. Sommariva¹⁶, S. Sridhar², and G. Szepesi⁵

The Jet Contributors and DIII-D Team

Rapporteured by: **D. Shiraki**

¹General Atomics, San Diego, CA 92186, USA

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁵United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁶Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁷Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁸Università di Tor Vergata, 00173 Rome, Italy

⁹University of California San Diego, CA 92093, USA

¹⁰Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

¹¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

¹²International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

¹³Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

¹⁴Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

¹⁵Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹⁶Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: C. Paz-Soldan, paz-soldan@fusion.gat.com

See also Poster EX/5-2Rb: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–0647

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Mitigation by Symmetric Dual Injection of Shattered Pellets in KSTAR

J. Kim¹, L. R. Baylor², M. Lehnen³, N. Eidietis⁴, S. Park¹, J. J. Jang¹, D. Shiraki², A. Y. Aydemir¹, K. P. Kim¹, K. C. Lee¹, Y.-C. Ghim⁵, G. Yun⁶, K. Yi¹, J.-W. Juhn⁷, D. Lee⁵, M. U. Lee⁶, S. G. Thatipamula⁶, H. Han¹, M. Reinke², J. Herfindal², and U. Kruezi³

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁴General Atomics, San Diego, CA 92186, USA

⁵Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

⁶Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Republic of Korea

⁷Seoul National University, Seoul, Republic of Korea

Corresponding Author: J. Kim, jayhyunkim@nfri.re.kr

See also Poster EX/5-3Ra: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0831

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development and Experimental Qualification of Novel Disruption Prevention Techniques on DIII-D

J. Barr¹, X. Du¹, N. Eidietis¹, D. Humphreys¹, A. Hyatt¹, N. Logan², E. Olofsson¹, B. Sammuli¹, E. Strait¹, W. Wehner¹, C. Rea³, R. Granetz³, Z. Wang², M. Boyer², T. Liu⁴, and S. Munaretto¹

The DIII-D Team

¹*General Atomics, San Diego, CA 92186, USA*

²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

³*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

⁴*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

Corresponding Author: J. Barr, barrj@fusion.gat.com

See also Poster EX/5-4: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–0681

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Isotope Identity Experiments in JET with ITER-Like Wall

C. Maggi¹, H. Weisen², F. J. Casson³, F. Auriemma⁴, R. Lorenzini⁴, H. Nordman⁵,
E. Delabie⁶, J. Flanagan^{3,1}, D. Keeling¹, D. King³, L. Horvath³, M. Maslov³, S. Menmuir¹,
A. Salmi⁷, P. A. Schneider⁸, A. Sips⁹, and T. Tala⁷

¹Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

²École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁴Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁵Chalmers University of Technology, Göteborg, Sweden

⁶Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁷VTT Technical Research Centre of Finland Ltd., Espoo, Finland

⁸Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁹JET Exploitation Unit, Culham Science Centre, Abingdon, UK

Corresponding Author: C. Maggi, costanza.maggi@ukaea.uk

See also Poster EX/6-1: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1078

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Transition Between Isotope-Mixing and Nonmixing States in Hydrogen-Deuterium Mixture Plasmas in the Large Helical Device

K. Ida¹, M. Nakata¹, K. Tanaka¹, M. Yoshinuma¹, Y. Fujiwara¹, R. Sakamoto¹, G. Motojima¹, S. Masuzaki¹, T. Kobayashi², and K. Yamasaki³

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Interdisciplinary Graduate School of Engineering Sciences (IGSES), Kyushu University, Kasuga, Japan

³Kyushu University, Kasuga, Japan

Corresponding Author: K. Ida, ida@nifs.ac.jp

See also Poster EX/6-2: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0692

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Confinement in Electron Heated Plasmas in Wendelstein 7-X and ASDEX-Upgrade: The Necessity to Control Turbulent Transport

M. N. A. Beurskens¹, S. Bozhenkov¹, E. Fable², G. Fuchert¹, O. Ford², M. Reisner², E. Scott³, A. von Stechow², J. Stober², Y. Turkin², G. Weir², P. Xanthopoulos¹, J. Alcusón¹, C. Angioni², J. Baldzuhn², C. D. Beidler¹, G. Birkenmeier², R. Burhenn², A. Dinklage², O. Grulke¹, M. Hirsch², M. Jakubowski², H. Laqua¹, S. Lazerson², P. A. Schneider², T. Stange², U. Stroth², F. Warmer², T. Wegner¹, D. Zhang¹, R. C. Wolf², and H. Zohm²

The Wendelstein 7-X and ASDEX-Upgrade Teams

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: M. N. A. Beurskens, marc.beurskens@ipp.mpg.de

See also Poster EX/6-3: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-1364

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Performance Integration of High Temperature Plasmas in the LHD Deuterium Operation

H. Takahashi¹, K. Mukai¹, T. Kobayashi¹, S. Murakami², H. Nakano¹, K.-I. Nagaoka¹, S. Ohdachi¹, M. Yoshinuma¹, K. Ida¹, R. Yanai¹, Y. Yoshimura¹, T. Tsujimura¹, K. Tanaka¹, M. Nakata¹, H. Yamaguchi^{1,3}, R. Seki¹, M. Yokoyama¹, T. Oishi¹, Y. Kawamoto¹, M. Goto¹, T. Seki¹, K. Saito¹, H. Kasahara¹, S. Kamio¹, Y. Suzuki¹, R. Sakamoto¹, G. Motojima¹, M. Kobayashi¹, I. Yamada¹, R. Yasuhara¹, H. Funaba¹, K. Ogawa¹, M. Isobe¹, T. Tokuzawa¹, A. Ejiri⁴, M. Osakabe¹, T. Morisaki¹, and Y. Takeiri¹

The LHD Experiment Group

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

³National Institute for Natural Science (NINS), Minato-ku, Tokyo, 105-0001 Japan

⁴Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

Corresponding Author: H. Takahashi, takahashi.hiromi@nifs.ac.jp

See also Poster EX/6-4: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0781

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Evolution of the Electric Potential and Turbulence in OH and ECRH Low-Density Plasmas in the T-10 Tokamak

M. Drabinskiy¹, L. Eliseev¹, S. Grashin¹, M. Isaev¹, P. Khabanov¹, N. Kharchev¹,
L. Klyuchnikov¹, S. Lysenko¹, A. Melnikov¹, D. Ryzhakov¹, R. Shurygin¹, N. A. Solovov¹,
and V. Vershkov¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: M. Drabinskiy, drabinskiy_ma@nrcki.ru

Presenting Author: A. Melnikov

See also Poster EX/6-5: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0661

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Diverted Negative Triangularity Plasmas on DIII-D: The Benefit of High Confinement without the Liability of an Edge Pedestal

A. Marinoni¹, M. Austin², A. Hyatt³, S. Coda⁴, J. Hanson⁵, D. Pace³, C. Paz-Soldan³, C. C. Petty³, M. Porkolab¹, T. Rhodes⁶, F. Sciortino¹, F. Scotti⁷, S. Smith³, F. Turco⁵, and Z. Yan⁸

¹Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

²University of Texas at Austin, Austin, TX 78712, USA

³General Atomics, San Diego, CA 92186, USA

⁴Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁵Columbia University, New York, NY 10027, USA

⁶University of California Los Angeles, CA 90095, USA

⁷Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁸University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: A. Marinoni, marinoni@fusion.gat.com

See also Poster EX/6-6Ra: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0857

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Route to High Performance, DEMO Relevant, Negative Triangularity Tokamak Operation on TCV

L. Porte¹, J. Boedo², S. Brunner¹, S. Coda¹, M. Fontana¹, T. Golfinopoulos³, W. Han³, Z. Huang³, B. Labit¹, A. Merle¹, G. Merlo⁴, N. Offeddu¹, O. Sauter¹, and C. Theiler¹

Rapporteured by: **A. Marinoni**

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²University of California Irvine, CA 92697, USA

³Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

⁴Oden Institute for Computational Engineering and Sciences, University of Texas at Austin, Austin, TX 78712, USA

Corresponding Author: L. Porte, laurie.porte@epfl.ch

See also Poster EX/6-6Rb: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0982

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

Achievements of Actively Controlled Divertor Detachment Compatible with Sustained High Confinement Core in DIII-D and EAST

L. Wang¹, H. Wang², A. M. Garofalo², X. Gong¹, H. Guo², D. Eldon², Q. Yuan¹, K. Li¹, K. Wu¹, G. Xu¹, J. Xu¹, J. Liu¹, L. Meng¹, B. Zhang¹, Y. Duan¹, F. Ding¹, S. Ding¹, J. Qian¹, J. Huang¹, J. Barr², D. Weisberg², A. Hyatt², A. W. Leonard², M. E. Fenstermacher³, C. Lasnier³, J. Watkins⁴, T. Osborne², D. M. Thomas², D. Humphreys², R. J. Buttery², G.-N. Luo¹, B. Xiao¹, J. Li¹, and B. Wan¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

³*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

⁴*Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA*

Corresponding Author: L. Wang, wliang@ipp.ac.cn

See also Poster EX/7-1: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0892

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Impurity Concentrations Required to Reach Detachment in AUG and JET

S. Henderson¹, M. Bernert², D. Brida², M. Cavedon², P. David², R. Dux², C. Giroud¹, J. Harrison³, A. Huber⁴, A. Kallenbach², B. Lomanowski⁵, A. Meigs¹, R. A. Pitts⁶, F. Reimold², N. Vianello⁷, S. Wiesen⁸, and M. Wischmeier²

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁴Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁵Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁷Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁸Forschungszentrum Jülich GmbH, Jülich, Germany

Corresponding Author: S. Henderson, stuart.henderson@ukaea.uk

See also Poster EX/7-2: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0923

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Control of the X-Point Radiator in Fully-Detached ASDEX-Upgrade H-Mode Plasmas

M. Bernert¹, F. Janky¹, B. Sieglin¹, F. Reimold¹, A. Kallenbach¹, M. Wischmeier¹,
B. Lipschultz², O. Kudlacek¹, M. Cavedon¹, P. David¹, M. Dunne¹, R. M. McDermott¹,
W. Treutterer¹, E. Wolfrum¹, D. Brida¹, O. F evrier³, S. Henderson⁴, and M. Komm⁵

The ASDEX-Upgrade and EUROfusion MST1 Teams

¹Max-Planck-Institut f ur Plasmaphysik, Garching, 85748 Germany

²University of York, Heslington, UK

³Swiss Plasma Center (SPC),  cole polytechnique f ed erale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

Corresponding Author: M. Bernert, matthias.bernert@ipp.mpg.de

See also Poster EX/7-3: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1156

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Overview of the Results from the Divertor Experiments at Wendelstein 7-X and their Implications for Steady State Operation

M. Jakubowski¹, A. Dinklage¹, M. Endler¹, Y. Feng², Y. Gao¹, G. Fuchert², R. König¹, T. Kremeyer³, M. Krychowiak¹, M. Otte¹, H. Niemann¹, V. Perseo¹, V. Winters^{1,4}, F. Reimold¹, L. Rudischhauser¹, G. Schlisio¹, O. Schmitz³, T. S. Pedersen¹, S. Brezinsek⁵, R. Burhenn¹, P. Drewelow¹, P. Drews⁴, F. Effenberg⁶, K. Hammond⁶, C. Killer², A. Knieps⁵, J. D. Lore⁷, A. Puig Sitjes¹, E. Wang⁵, U. Wenzel¹, G. Wurden⁸, and D. Zhang²

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁵Forschungszentrum Jülich GmbH, Jülich, Germany

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁷Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁸Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

Corresponding Author: M. Jakubowski, marcin.jakubowski@ipp.mpg.de

See also Poster EX/7-4: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0998

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advances in Understanding Power Exhaust Physics with the New, Baffled TCV Divertor

C. Theiler¹, H. De Oliveira¹, B. Duval¹, O. F evrier¹, A. Fil^{2,3}, H. Reimerdes¹, A. Thornton², M. Wensing¹, M. Baquero-Ruiz¹, M. Bernert⁴, D. Brida⁴, C. Colandrea¹, D. Galassi¹, S. Gorno¹, J. Harrison², S. Henderson³, M. Komm⁵, B. Labit¹, B. Linehan⁶, B. Lipschultz⁷, L. Martinelli¹, A. Perek⁸, H. Raj¹, U. Sheikh¹, and C. Tsui⁹

¹Swiss Plasma Center (SPC),  cole polytechnique f ed erale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁴Max-Planck-Institut f ur Plasmaphysik, Garching, 85748 Germany

⁵Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

⁶Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

⁷University of York, Heslington, UK

⁸Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁹University of California San Diego, CA 92093, USA

Corresponding Author: C. Theiler, christian.theiler@epfl.ch

See also Poster EX/7-5: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0995

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Synergy Between Divertor Geometry and Drifts on Divertor Power Dissipation in the DIII-D Small Angle Slot Divertor

H. Wang¹, H. Guo¹, X. Ma², T. Osborne¹, J. Ren³, J. Watkins⁴, E. Meier⁵, D. M. Thomas¹,
A. Moser¹, M. Shafer⁶, and P. C. Stangeby⁷

¹General Atomics, San Diego, CA 92186, USA

²Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

³University of Tennessee, Knoxville, TN 37996, USA

⁴Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA

⁵University of Washington, Seattle, WA 98195, USA

⁶Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁷University of Toronto, Toronto, ON M5S-1A1, Canada

Corresponding Author: H. Wang, wanghuiqian@fusion.gat.com

See also Poster EX/7-6: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0927

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Scenario Preparation for the Observation of Alpha-Driven Instabilities and Transport of Alpha Particles in JET DT Plasmas

R. Dumont¹, D. Keeling², M. Fitzgerald², S. Sharapov², M. Baruzzo³, P. Bonofiglio⁴, M. Dreval⁵, C. Challis², C. Giroud², J. Eriksson⁶, J. Ferreira⁷, N. Fil², J. Garcia⁸, L. Giacomelli⁹, V. Goloborodko¹⁰, E. Joffrin¹, S. Hacquin⁸, N. Hawkes², T. Johnson¹¹, Y. Kazakov¹², V. Kiptily¹³, E. A. Lerche¹⁴, M. Lennholm¹⁵, J. Mailloux¹³, F. Nabais¹⁶, M. Nocente¹⁷, L. Piron², M. Poradzinski¹⁸, P. Puglia¹⁹, E. R. Solano²⁰, R. A. Tinguely²¹, S. Vartanian¹, and H. Weisen¹⁹

The Jet Contributors

¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

⁶Uppsala University, Uppsala, Sweden

⁷ISFN, Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

⁸Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁹Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

¹⁰Kiev Institute for Nuclear Research, Kiev, Ukraine

¹¹KTH Royal Institute of Technology, Stockholm, Sweden

¹²Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

¹³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

¹⁴LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

¹⁵European Commission, Brussels, Belgium

¹⁶Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁷Università degli Studi di Milano-Bicocca, 20126 Milano, Italy

¹⁸Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

¹⁹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²⁰Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²¹Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

Corresponding Author: R. Dumont, remi.dumont@cea.fr

See also Poster EX/8-1: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1098

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Improving Fast-Ion Confinement and Performance by Reducing Alfvén Eigenmodes in the $q_{\min} > 2$, Steady-State Scenario

C. Collins¹, C. T. Holcomb², M. A. Van Zeeland¹, and E. M. Bass³

¹General Atomics, San Diego, CA 92186, USA

²Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

³University of California San Diego, CA 92093, USA

Corresponding Author: C. Collins, collinscs@fusion.gat.com

See also Poster EX/8-2: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0933

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Comprehensive Study of Energetic Particle Transport due to Energetic Particle Driven MHD Instabilities in LHD Deuterium Plasmas

K. Ogawa^{1,2}, M. Isobe^{1,2}, S. Kamio^{1,2}, Y. Fujiwara^{1,2}, S. Siriyaporn^{1,2}, R. Seki^{1,2}, H. Nuga^{1,2},
H. Yamaguchi^{1,2}, M. Kobayashi^{1,2}, and M. Osakabe^{1,2}

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²National Institute for Natural Science (NINS), Minato-ku, Tokyo, 105-0001 Japan

Corresponding Author: K. Ogawa, kogawa@nifs.ac.jp

See also Poster EX/8-3: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0688

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advances in Understanding High-Z Sourcing, Migration, and Transport on DIII-D from L-Mode to High-Performance Regimes

T. Abrams¹, E. Unterberg², D. Donovan³, J. Nichols³, S. Zamperini³, D. L. Rudakov⁴,
J. Guterl¹, J. D. Elder⁵, and W. Wampler⁶

¹General Atomics, San Diego, CA 92186, USA

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³University of Tennessee, Knoxville, TN 37996, USA

⁴University of California San Diego, CA 92093, USA

⁵Institute for Aerospace Studies, University of Toronto, Toronto, ON M5S-1A1, Canada

⁶Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA

Corresponding Author: T. Abrams, abramst@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0660

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Stability of Elevated- q_{\min} , Steady-State Scenario Plasmas on DIII-D

B. Victor¹, K. Thome², C. T. Holcomb¹, J. M. Park³, W. Wehner², C. Collins², J. Hanson⁴,
B. A. Grierson⁵, and C. C. Petty²

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²General Atomics, San Diego, CA 92186, USA

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Columbia University, New York, NY 10027, USA

⁵Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: B. Victor, victorb@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0662

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impact of Opacity in Determining the Pedestal Density Structure on DIII-D and C-Mod

S. Mordijck¹, J. W. Hughes², and R. Reksoatmodjo¹

¹College of William & Mary, Williamsburg, VA 23185, USA

²Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

Corresponding Author: S. Mordijck, mordijck@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0667

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Multimachine Scalings of Thresholds for $N=1$ and $N=2$ Error Field Correction

N. Logan¹, J.-K. Park¹, Q. Hu¹, T. Markovic², H.-H. Wang³, M. Maraschek⁴, L. Piron⁵, P. Piovesan⁶, Y. In⁷, C. Paz-Soldan⁸, S. Wolfe⁹, E. Strait⁸, S. Munaretto⁸, and S. Yang¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic

³Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁷Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

⁸General Atomics, San Diego, CA 92186, USA

⁹Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: N. Logan, nlogan@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0669

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Disruptive Neoclassical Tearing Mode Seeding in DIII-D with Implications for ITER

R. J. La Haye¹, J. D. Callen², C. Chrystal¹, C. C. Hegna², E. Howell³, M. Okabayashi⁴,
E. Strait¹, and R. Wilcox⁵

¹General Atomics, San Diego, CA 92186, USA

²University of Wisconsin-Madison, Madison, WI 53706, USA

³Tech-X Corporation, Boulder, CO 80303, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

Corresponding Author: R. J. La Haye, rbrtlahaye@gmail.com

Synopsis: via Indico server: [IAEA-CN-286-0672](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Internal Measurement of Magnetic Turbulence in the Pedestal of ELMy H-Mode DIII-D Plasmas

J. Chen¹, D. L. Brower¹, W. Ding¹, Z. Yan², M. Curie³, M. T. Kotschenreuther⁴,
T. Osborne⁵, E. Strait⁵, D. Hatch⁴, H. Michael³, M. Swadesh³, and X. Jian⁶

¹University of California Los Angeles, CA 90095, USA

²University of Wisconsin-Madison, Madison, WI 53706, USA

³University of Texas at Austin, Austin, TX 78712, USA

⁴Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA

⁵General Atomics, San Diego, CA 92186, USA

⁶University of California San Diego, CA 92093, USA

Corresponding Author: J. Chen, chenjie@ucla.edu

Synopsis: via Indico server: IAEA-CN-286-0682

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Integrated Control of Individual Scalars to Regulate Profiles and Improve MHD Stability in Tokamaks

A. Pajares¹, E. Schuster¹, A. Welander², J. Barr², N. Eidielis², K. Thome², and D. Humphreys²

¹*Lehigh University, Bethlehem, PA 18015, USA*

²*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: A. Pajares, andres.pajares@lehigh.edu

Synopsis: via Indico server: IAEA-CN-286-0684

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Energy Confinement Evolution at Very High Edge Pedestal in Super H-Mode Experiments

A. M. Garofalo¹, S. Ding², X. Jian³, B. A. Grierson⁴, C. Holland³, M. Knolker²,
A. Marinoni⁵, J. T. McClenaghan¹, C. C. Petty¹, and W. M. Solomon¹

¹General Atomics, San Diego, CA 92186, USA

²Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

³University of California San Diego, CA 92093, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: A. M. Garofalo, garofalo@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0703

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Slowly Rotating 3D Field for Locked Mode Avoidance and H-Mode Recovery in DIII-D

M. Okabayashi¹, D. Brennan¹, S. Inoue², Y. Liu³, N. Logan¹, E. Strait³, L. E. Sugiyama⁴, C. Chrystal³, N. Ferraro¹, S. C. Jardin¹, J. Hanson⁵, C. T. Holcomb⁶, R. J. La Haye³, and B. Victor⁶

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

³General Atomics, San Diego, CA 92186, USA

⁴Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁵Columbia University, New York, NY 10027, USA

⁶Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

Corresponding Author: M. Okabayashi, mokabaya@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0707

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The High-Power Helicon Program at DIII-D: Gearing up for First Experiments

B. Van Compernelle¹, M. Brookman¹, C. Moeller¹, R. Pinsker¹, R. O'Neill¹, K. Schultz¹, R. Nguyen¹, H. Torreblanca¹, T. Raines², A. Nagy², A. C. Torrezan de Sousa¹, D. Ponce¹, D. Geng¹, A. Marinoni³, M. Porkolab³, C. Rost³, E. Martin⁴, O. Schmitz⁵, and A. M. Garofalo¹

¹General Atomics, San Diego, CA 92186, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁴Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁵University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: B. Van Compernelle, vancompernelle@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0711

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Testing the DIII-D Co/Counter Off-Axis Neutral Beam Injected Power and Ability to Balance Injected Torque

B. A. Grierson¹, M. A. Van Zeeland², J. M. Park³, I. Bykov⁴, W. W. Heidbrink⁵,
J. T. Scoville², B. Crowley², A. Nagy¹, and S. Haskey¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²General Atomics, San Diego, CA 92186, USA

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴University of California San Diego, CA 92093, USA

⁵University of California Irvine, CA 92697, USA

Corresponding Author: B. A. Grierson, bgriers@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0744

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High-Energy Fast Ions Drive BAEs Unstable but not BAAEs

W. W. Heidbrink¹, M. A. Van Zeeland², M. Austin³, A. Bierwage⁴, X. Du², P. Lauber⁵,
Z. Lin¹, and G. J. Choi¹

¹University of California Irvine, CA 92697, USA

²General Atomics, San Diego, CA 92186, USA

³University of Texas at Austin, Austin, TX 78712, USA

⁴National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: W. W. Heidbrink, bill.heidbrink@uci.edu

Synopsis: via Indico server: IAEA-CN-286-0748

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Main-Ion Thermal Transport in High Performance DIII-D Edge Transport Barriers

S. Haskey¹, B. A. Grierson¹, C. Chrystal², G. J. Kramer¹, Z. Yan³, E. A. Belli², T. Rhodes⁴, F. M. Laggner¹, K. K. Barada⁴, J. Chen⁴, R. Nazikian¹, J. Candy², M. A. Van Zeeland², A. Ashourvan¹, and S. Banerjee⁵

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²General Atomics, San Diego, CA 92186, USA

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴University of California Los Angeles, CA 90095, USA

⁵College of William & Mary, Williamsburg, VA 23185, USA

Corresponding Author: S. Haskey, shaskey@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0750

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

MHD Stability Constraints on Divertor Heat Flux Width in DIII-D

A. W. Leonard¹, A. E. Järvinen², A. G. McLean², F. Scotti², and S. Haskey³

¹*General Atomics, San Diego, CA 92186, USA*

²*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: A. W. Leonard, leonard@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0780

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Enhanced Divertor Power Exhaust Through Injection of Low-Z Powders in DIII-D

F. Effenberg¹, A. Bortolon¹, R. Lunsford¹, R. Maingi¹, A. Nagy¹, H. Frerichs², J. D. Lore³, I. Bykov⁴, L. Casali⁵, M. E. Fenstermacher⁶, H. Wang⁵, Y. Feng⁷, F. M. Laggner¹, R. Nazikian¹, and D. M. Thomas⁵

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Wisconsin-Madison, Madison, WI 53706, USA

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴University of California San Diego, CA 92093, USA

⁵General Atomics, San Diego, CA 92186, USA

⁶Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁷Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

Corresponding Author: F. Effenberg, feffenbe@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0785

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Impact of Low-Z Powder Injection on Intrinsic Impurities in DIII-D

R. Lunsford¹, A. Bortolon¹, A. Diallo¹, R. Maingi¹, A. Nagy¹, T. Osborne², and F. Scotti³

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: R. Lunsford, rlunsfor@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0811

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Reduction of Peak ELM Energy Fluence with Pellet Triggering in Low Collisionality DIII-D Plasmas

R. Wilcox¹, L. R. Baylor¹, A. Bortolon², I. Bykov³, S. Diem⁴, M. Knolker⁵, C. Lasnier⁶,
C. Paz-Soldan⁵, and D. Shiraki¹

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

³*University of California San Diego, CA 92093, USA*

⁴*University of Wisconsin-Madison, Madison, WI 53706, USA*

⁵*General Atomics, San Diego, CA 92186, USA*

⁶*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: R. Wilcox, wilcoxrs@ornl.gov

Synopsis: via Indico server: [IAEA-CN-286-0818](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advancements in Understanding the 2D Role of Impurity Radiation for Dissipative Divertor Operation on DIII-D

C. Samuelli¹, A. G. McLean¹, A. E. Järvinen¹, C. Johnson², S. Allen¹, M. E. Fenstermacher¹, A. Holm³, C. Lasnier¹, G. Porter¹, T. Rognlien¹, F. Scotti¹, A. W. Leonard⁴, W. Meyer¹, A. Moser⁴, M. Shafer⁵, D. M. Thomas⁴, H. Wang⁴, J. Watkins⁶, and M. Groth³

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Auburn University, Auburn, AL 36849, USA

³Aalto University, Espoo, Finland

⁴General Atomics, San Diego, CA 92186, USA

⁵Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁶Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA

Corresponding Author: C. Samuelli, samuelli1@llnl.gov

Synopsis: via Indico server: IAEA-CN-286-0867

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Turbulence Flow Dynamics and Mode Structure Impacts on the L-H Transition

Z. Yan¹, G. R. McKee¹, D. Kriete¹, L. Schmitz^{2,3}, G. Punit⁴, C. Holland⁵, S. Haskey⁶,
B. A. Grierson⁶, R. Wilcox⁷, T. Rhodes³, and C. C. Petty⁴

¹University of Wisconsin-Madison, Madison, WI 53706, USA

²TAE Technologies, Inc., Foothill Ranch, CA 92688, USA

³University of California Los Angeles, CA 90095, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵University of California San Diego, CA 92093, USA

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁷Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

Corresponding Author: Z. Yan, zyan5@wisc.edu

Synopsis: via Indico server: IAEA-CN-286-0873

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Novel Internal Measurements and Analysis of Ion Cyclotron Frequency Range Fast-Ion Driven Modes Advance Predictive Capability for Fast-Ion Transport in Burning Plasmas

N. Crocker¹, S. X. Tang¹, K. Thome², J. Lestz³, E. Belova³, A. Zalzali⁴, R. Dendy⁴, W. Peebles¹, K. K. Barada¹, R. Hong¹, T. Rhodes¹, G. Wang¹, L. Zeng¹, T. Carter¹, G. Degrandchamp⁵, W. W. Heidbrink⁵, and R. Pinsker²

¹University of California Los Angeles, CA 90095, USA

²General Atomics, San Diego, CA 92186, USA

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴University of Warwick, Coventry, UK

⁵University of California Irvine, CA 92697, USA

Corresponding Author: N. Crocker, ncrocker@physics.ucla.edu

Synopsis: via Indico server: IAEA-CN-286-0920

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Limits of RMP ELM Suppression in Double Null Plasmas

M. Shafer¹, C. Paz-Soldan², T. E. Evans², N. Ferraro³, B. Lyons², T. Osborne², and A. Turnbull²

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: M. Shafer, shafermw@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-0930

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Divertor Detachment and Radiated Power Control Developments on DIII-D and EAST

D. Eldon¹, H. Wang¹, L. Wang², J. Barr¹, S. Ding³, A. M. Garofalo¹, X. Gong², H. Guo¹, A. E. Järvinen⁴, A. W. Leonard¹, K. Li², J. T. McClenaghan¹, A. G. McLean⁴, A. Moser¹, P. B. Snyder¹, J. Watkins⁵, D. Weisberg¹, T. Wilks⁶, and Q. Yuan²

¹General Atomics, San Diego, CA 92186, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

⁴Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁵Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA

⁶Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: D. Eldon, eldond@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0934

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effect of Pedestal Fluctuations on Inter-ELM Pedestal Recovery and ELM Characteristics in ECH Dominated Discharges in DIII-D

S. Banerjee¹, S. Mordijck¹, K. K. Barada², L. Zeng², R. J. Groebner³, T. Osborne³, T. Rhodes², P. B. Snyder³, B. A. Grierson⁴, A. Diallo⁴, Z. Yan⁵, J. Chen², F. M. Laggner⁴, and S. Haskey⁴

¹College of William & Mary, Williamsburg, VA 23185, USA

²University of California Los Angeles, CA 90095, USA

³General Atomics, San Diego, CA 92186, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: S. Banerjee, sbanerjee@wm.edu

Synopsis: via Indico server: IAEA-CN-286-0939

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Accurate Disruption Prediction on the DIII-D Tokamak using Deep Learning with Raw, Multiscale Diagnostic Data

R. Churchill¹, B. Tobias², and Y. Zhu³

The DIII-D Team

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

³University of California Davis, CA 95616, USA

Corresponding Author: R. Churchill, rchurchi@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0941

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Prevention via Interpretable Data-Driven Algorithms on DIII-D and EAST

C. Rea¹, K. Montes¹, W. Hu², K. Erickson³, A. Pau⁴, R. Granetz¹, J. Barr⁵, B. Sammuli⁵,
Q. Yuan², D. Chen², B. Shen², and B. Xiao²

¹Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁵General Atomics, San Diego, CA 92186, USA

Corresponding Author: C. Rea, crea@mit.edu

Synopsis: via Indico server: [IAEA-CN-286-0946](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

New Regime for High- β Hybrid using Off-Axis Electron Cyclotron Current Drive on DIII-D

C. C. Petty¹, J. Ferron¹, C. T. Holcomb², T. Osborne¹, T. W. Petrie¹, K. Thome¹, F. Turco³,
and M. A. Van Zeeland¹

¹General Atomics, San Diego, CA 92186, USA

²Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

³Columbia University, New York, NY 10027, USA

Corresponding Author: C. C. Petty, petty@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0950

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear MHD Modelling of Divertor Striations in DIII-D RMP ELM Suppressed Discharges

D. Orlov¹, T. E. Evans², R. Moyer¹, I. Bykov¹, M. E. Fenstermacher³, C. Lasnier³,
H. Wang², S. Munaretto², F. Effenberg⁴, M. Bécoulet⁵, E. Howell⁶, J. King⁶, A. Wingen⁷,
and G. T. A. Huijsmans⁸

¹University of California San Diego, CA 92093, USA

²General Atomics, San Diego, CA 92186, USA

³Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁶Tech-X Corporation, Boulder, CO 80303, USA

⁷Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁸Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

Corresponding Author: D. Orlov, orlov@fusion.gat.com

Synopsis: via Indico server: [IAEA-CN-286-0953](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Improved Impurity Retention and Pedestal Performance in DIII-D Closed Divertor

L. Casali¹, T. Osborne¹, B. A. Grierson², A. G. McLean³, E. Meier⁴, M. Shafer⁵, H. Wang¹, and J. Watkins⁶

¹General Atomics, San Diego, CA 92186, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁴University of Washington, Seattle, WA 98195, USA

⁵Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁶Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA

Corresponding Author: L. Casali, casalil@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0956

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Reducing the L-H Transition Power Threshold via Neoclassical Toroidal Viscosity, Edge Rotation Reversals, and Shape Changes

L. Schmitz¹, R. Wilcox², T. Rhodes¹, Z. Yan³, G. R. McKee³, T. E. Evans⁴, B. Lyons⁴, C. Paz-Soldan⁴, D. Orlov⁵, D. Kriete³, L. Zeng¹, T. Osborne⁴, S. Haskey⁶, B. A. Grierson⁶, P. Gohil⁴, and C. C. Petty⁴

¹University of California Los Angeles, CA 90095, USA

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵University of California San Diego, CA 92093, USA

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: L. Schmitz, lschmitz@ucla.edu

Synopsis: via Indico server: IAEA-CN-286-1007

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Off-Axis Neutral Beam Current Drive for Advanced Tokamak

J. M. Park¹, C. C. Petty², M. A. Van Zeeland², B. A. Grierson³, W. W. Heidbrink⁴,
C. Collins², B. Victor⁵, K. Thome², C. T. Holcomb⁵, and K. Kim¹

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁴*University of California Irvine, CA 92697, USA*

⁵*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: J. M. Park, parkjm@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-1009

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ELM Suppression Sustained by $N=1$ Radiation-Belt Oscillations near the X-Point Excited by Divertor Impurity Seeding in EAST

G. Xu¹, Y. Ye¹, Y. Tao¹, Y. Wang¹, K. Li¹, L. Wang¹, H. Guo², L. Meng¹, K. Wu¹, R. Chen¹,
Y. Wang¹, Y. Duan¹, L. Zhang¹, and B. Wan¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: G. Xu, gsxu@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0872

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Evidence of ITG/TEM Turbulence Transition Causing Edge Temperature Ring Oscillation for Sustaining Stationary I-Mode Plasmas

X. Zou¹

¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: X. Zou, xiao-lan.zou@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0906

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

H-Mode Operation in He Plasmas with Pure RF-Heating and ITER-Like Tungsten Divertor on EAST

B. Zhang¹, X. Gong¹, J. Qian¹, R. Ding¹, J. Huang¹, Y. Sun¹, X. Gu¹, Y. Li¹, W. Gao¹, Y. Yu¹, M. H. Li¹, Z. Sun², G. Zhong¹, Y. Duan¹, S. Mao¹, L. Wang¹, F. Ding¹, Q. Zang¹, Q. Ma¹, J. Liu¹, and Y. Chen¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: B. Zhang, binzhang@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0917

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Model-Predictive Kinetic Control Experiments on EAST

D. Moreau¹, S. Wang¹, J. Qian², Q. Yuan², B. Sammul³, X. Gong², Y. Huang², M. H. Li²,
S. Liu², Z. Luo², E. Olofsson³, L. Zeng², J.-F. Artaud¹, A. Ekedahl¹, and E. Witrant²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

³*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: D. Moreau, didier.moreau@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0924

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Quiescent H-Mode Scenario with ITER-Like Tungsten Divertor in EAST

J. Qian¹, A. M. Garofalo², X. Gong¹, B. Zhang¹, T. Shi¹, L. Zeng¹, Q. Ma¹, L. Xu¹, J. Huang¹, C. T. Holcomb³, D. Weisberg², M. Wu¹, J. Chen¹, S. Ding¹, Q. Zang¹, B. Lyu¹, H. Liu¹, and Y. Sun¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

³*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: J. Qian, jpqian@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0960

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Operation in the Quiescent Regime with a High Runaway Electron Current Fraction on the EAST Tokamak

L. Zeng¹, X. Zhu², Z. Qiu³, Y. Liang⁴, S. Lin¹, H. Liu¹, Y. Liu¹, A. Ti¹, T. Tang¹, T. Zhang¹,
D. Kong¹, Y. Wang¹, Y. Hu¹, N. Chu¹, T. Shi¹, J. Qian¹, X. Gong¹, B. Zhang¹, Y. Sun¹,
B. Lyu¹, Q. Zang¹, Y. Jie¹, and X. Gao¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China*

³*Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China*

⁴*Forschungszentrum Jülich GmbH, Jülich, Germany*

Corresponding Author: L. Zeng, zenglong@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1023

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development and Implementation of Integrated Q -Profile+ β_N Feedback Control Strategies for Access to Advanced Scenarios in EAST

E. Schuster¹, H. Wang¹, Z. Wang¹, Y. Huang², Z. Luo², B. Xiao², Q. Yuan²,
D. Humphreys³, A. Hyatt³, M. Walker³, and W. Wehner³

¹*Lehigh University, Bethlehem, PA 18015, USA*

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

³*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: E. Schuster, schuster@lehigh.edu

Synopsis: via Indico server: IAEA-CN-286-1024

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Investigation of the Excitation of Alfvén Eigenmodes and the Confinement of Energetic Ions During Sawteeth-Like Oscillation in EAST

M. Xu¹, H. Zhao¹, L. Xu¹, G. Zhong¹, G. Li¹, H. Liu¹, L. Zhang¹, Q. Zang¹, J. Zhang¹, L. Hu¹, G. Xu¹, X. Gong¹, X. Zhang¹, and B. Wan¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: M. Xu, mxu@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1028

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

In-Situ Leading Edge Induced Thermal Damages of Melting and Cracking on ITER-Like W/Cu Mono-Blocks During Long Pulse Operations in EAST

D. Zhu¹, C. Li¹, R. Ding¹, B. Gao¹, J. Chen¹, X. Gong¹, and B. Wang¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: D. Zhu, dhzhu@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1066

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma-Wall Interactions During the Helium Plasma Operation in EAST with a Tungsten Divertor

R. Ding¹, B. Zhang¹, X. Gong¹, J. Qian¹, F. Ding¹, Y. Yu¹, L. Wang¹, J. Liu¹, G. Xu¹, J. Huang¹, W. Gao¹, S. Liu¹, L. Meng¹, B. Cao¹, Z. Sun¹, H. Xie¹, J. Peng¹, L. Mu¹, C. Li¹, Y. Zhang¹, Q. Ma¹, Y. Sun¹, Y. Li¹, X. Chen¹, K. Li¹, K. Wu¹, L. Zhang¹, Q. Yang¹, H. Liu¹, Q. Zang¹, L. Zeng¹, Z. Hu¹, R. Yan¹, D. Zhu¹, J. Hu¹, G. Xu¹, J. Chen¹, G. Luo¹, J. Li¹, B. Wan¹, S. Brezinsek², A. Kirschner², S. Möller², J. Oelmann², R. A. Pitts³, G. De Temmerman³, and W. Wampler⁴

The EAST (HT-7U) Team

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Forschungszentrum Jülich GmbH, Jülich, Germany*

³*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁴*Sandia National Laboratories (SNL), Albuquerque, NM 87185, USA*

Corresponding Author: R. Ding, rding@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1068

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of ITB Formation and Sustainment with Optimized Current Profiles in the High-Performance Steady State Plasma on EAST

H. Liu¹, Y. Chu¹, W. Mao², H. Lian¹, S. Wang¹, S. Zhang¹, J. Qian¹, Y. Yang¹, L. Zeng¹, J. Xie², Y. Jie¹, X. Gao¹, X. Gong¹, W. Ding², K. Hanada³, Y. Liang¹, N. Xiang¹, X. Zhang¹, and B. Wan¹

The EAST (HT-7U) Team

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

³*Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan*

Corresponding Author: H. Liu, hqliu@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1116

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Electron-Ion Side Asymmetry on Striated Heat Flux Induced by Lower Hybrid Wave Absorption in the SOL on the EAST

K. Gan¹, M. H. Li², X. Gong², T. Gray³, R. Maingi⁴, B. D. Wirth^{1,5}, B. Zhang², and M. Chen²

¹University of Tennessee, Knoxville, TN 37996, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁵Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

Corresponding Author: K. Gan, kgan@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1260

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

In-Situ Study of Fuel Retention by Laser-Induced Breakdown Spectroscopy on the First Wall under Long-Pulse Operation of Experimental Advanced Superconducting Tokamak

C. Li¹, D. Zhao², Z. Hu³, L. Sun¹, N. Gierse⁴, D. Nicolai⁴, R. Hai¹, D. Wu¹, H. Wu¹,
F. Ding³, G. Luo³, S. Brezinsek⁴, C. Linsmeier⁴, Y. Liang⁴, and H. Ding¹

¹*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

²*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

³*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

⁴*Forschungszentrum Jülich GmbH, Jülich, Germany*

Corresponding Author: C. Li, cli@dlut.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1276

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Generation Mechanism and Characteristics of Intrinsic Rotation in KSTAR

S. G. Lee¹, K. C. Lee¹, and J. Yoo¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: S. G. Lee, sglee@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0676

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improved Energy Confinement Triggered by Nonaxisymmetric Magnetic Field Driven Rotation Braking in KSTAR

K. Kim¹, H.-S. Kim¹, J. Kang¹, J. Yoo¹, M. J. Choi¹, J. Kim¹, W. H. Ko¹, M. Lee¹, and J.-M. Kwon¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: K. Kim, kiminkim@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0677

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Kinetic Equilibrium Reconstruction and Stability Analysis of KSTAR Plasmas Supporting Disruption Event Characterization and Forecasting

Y. Jiang¹, S. Sabbagh¹, Y.-S. Park¹, J. Berkery¹, J.-H. Ahn¹, J. Riquezes¹, J. Ko², J. Lee², S.-W. Yoon², A. Glasser³, and Z. Wang⁴

¹*Columbia University, New York, NY 10027, USA*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

³*Fusion Theory and Computation, Inc., Kingston, WA 98346, USA*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: Y. Jiang, yjiang@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0994

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Stability of Neoclassical Tearing Modes and their Active Stabilization in KSTAR

Y.-S. Park¹, S. Sabbagh¹, B.-H. Park², J.-H. Ahn¹, M. Woo², H.-S. Kim², M. J. Choi², Y. Jiang¹, J. Berkery¹, W. H. Ko², J. G. Bak², M. Joung², Z. Wang³, H. K. Park⁴, and S.-W. Yoon²

¹Columbia University, New York, NY 10027, USA

²National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

Corresponding Author: Y.-S. Park, ypark@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1014

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Tokamak Disruption Event Characterization and Forecasting Research and Expansion to Real-Time Application

S. Sabbagh¹, J. Berkery¹, Y.-S. Park¹, J.-H. Ahn¹, Y. Jiang¹, J. Riquezes¹, J. Bialek¹,
J. G. Bak², R. E. Bell³, M. Boyer³, K. Erickson³, C. Ham⁴, J. Hollocombe⁴, A. Kirk⁴,
B. P. Leblanc³, S.-H. Hahn², J. Kim², J. Ko², W. H. Ko², L. Kogan⁴, J. Lee², A. Thornton⁴,
S.-W. Yoon², and Z. Wang³

¹*Columbia University, New York, NY 10027, USA*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁴*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

Corresponding Author: S. Sabbagh, sabbagh@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1025

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

The Geometry of ICRF-Induced Wave-SOL Interaction: A Multimachine Experimental Review in View of ITER Operation

L. Colas¹, G. Urbanczyk², M. Goniche¹, J. Hillairet³, J.-M. Bernard¹, C. Bourdelle¹,
N. Fedorczak¹, C. Guillemaut¹, W. Helou⁴, V. Bobkov⁵, R. Ochoukov⁵, P. Jacquet⁶,
E. A. Lerche⁷, X. Zhang⁸, C. Qin⁸, C. C. Klepper⁹, C. Lau⁹, B. Van Compernelle¹⁰,
S. Wukitch¹¹, Y. Lin¹¹, and M. Ono¹²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*College of Physics and Optoelectronic Engineering (CIOEE),
Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁵*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁶*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁷*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

⁸*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

⁹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

¹⁰*General Atomics, San Diego, CA 92186, USA*

¹¹*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

¹²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: L. Colas, laurent.colas@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1033

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Exploration of RMP ELM Control on ITER Similar Shape (ISS) in KSTAR

S.-H. Hahn¹, Y. In², N. Eidielis³, J.-W. Juhn¹, J. Kang¹, M. Kim², W. H. Ko¹, J. Lee¹,
Y. H. Lee¹, M. Lee¹, G. Shin¹, J. Barr³, M. Walker³, and D. Humphreys³

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea

³General Atomics, San Diego, CA 92186, USA

Corresponding Author: S.-H. Hahn, hahn76@nfri.re.kr

Presenting Author: Y. In

Synopsis: via Indico server: IAEA-CN-286-1065

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Active Control of Toroidal Alfvén Eigenmodes using the Electron Cyclotron Waves in KSTAR High-Performance Discharges

J. Kim¹, J. Kang¹, T. Rhee¹, J. Jo¹, M. Lee¹, J. Yoo¹, M. J. Choi¹, J. Lee¹, Y. H. Lee¹, H. Han¹, M. Joung¹, M. Woo¹, H. Jhang¹, M. Podestà², R. Nazikian², S. Lee¹, J. Ko¹, J. M. Park³, and Y.-S. Na⁴

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴Seoul National University, Seoul, Republic of Korea

Corresponding Author: J. Kim, kimju@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1214

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Resolving the Dispersion of Plasma Waves by Measuring the Modulation of Electron Cyclotron Emissions

G. Yun¹, M. Kim¹, S. G. Thatipamula¹, J.-E. Leem¹, J. Lee², and W. Lee²

¹*Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Republic of Korea*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: G. Yun, gunsu@postech.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1240

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Process in KSTAR Long Pulse Operation

H.-S. Kim¹, Y. M. Jeon¹, S.-H. Hahn¹, H. Han¹, H. S. Kim¹, K. P. Kim¹, and S.-W. Yoon¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: H.-S. Kim, hskim0618@nfri.re.kr

Synopsis: via Indico server: [IAEA-CN-286-1246](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Sustainable Internal Transport Barrier Discharges in KSTAR

J. Chung¹, H. Han¹, H.-S. Kim¹, J. H. Lee¹, J. Kang¹, J. Ko¹, J.-W. Juhn¹, K. D. Lee¹,
S.-H. Hahn¹, S. H. Seo¹, S.-W. Yoon¹, W. H. Ko¹, and Y. M. Jeon¹

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

Corresponding Author: J. Chung, jinil@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1248

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Machine Learning Approach to Understand the Causality Between Solitary Perturbation and Edge Confinement Collapse in the KSTAR Tokamak

J. Lee¹, H. Seo¹, J. G. Bak², and G. Yun¹

¹*Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Republic of Korea*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: J. Lee, jieun_lee@postech.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1250

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Local Density Profiles of Impurities in KSTAR and WEST Plasmas by Spectroscopic Diagnostics and Forward Modelling

H. Shin¹, I. Song¹, Y. S. Han¹, J. Yoon¹, J. Hwang¹, R. Guirlet², Y. H. An³, C. Seon³, H. Lee³, S.-H. Hong³, and W. Choe¹

¹*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

²*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

³*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: H. Shin, hwshin92@kaist.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1298

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Experiment and Modelling of Divertor Detachment with Deuterium Injection in KSTAR H-Mode Plasmas

J. Hwang¹, J.-S. Park², R. A. Pitts², H. Lee³, J. G. Bak³, J.-W. Juhn⁴, J. J. Jang³, Y. S. Han¹, S.-H. Hong³, and W. Choe¹

¹*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

⁴*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: J. Hwang, junghoo.hwang@kaist.ac.kr

Synopsis: via Indico server: [IAEA-CN-286-1299](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Hybrid Scenarios in KSTAR: Experimental Approach and Physics Understanding

Y.-S. Na¹, Y. H. Lee¹, C. Byun¹, S. Kim¹, C. Lee¹, M. Park¹, S. Yang², B. Kim¹, Y. M. Jeon³, G. J. Choi⁴, J. Citrin⁵, J.-W. Juhn¹, J. Kang³, H.-S. Kim³, J. Kim³, W. H. Ko³, J.-M. Kwon³, W. Lee³, M. Woo³, S. Yi³, S.-W. Yoon³, and G. Yun⁶

¹*Seoul National University, Seoul, Republic of Korea*

²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

³*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

⁴*University of California Irvine, CA 92697, USA*

⁵*FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands*

⁶*Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790-784, Republic of Korea*

Corresponding Author: Y.-S. Na, ysna@snu.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1358

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Current Drive Experiments in SST1 Tokamak with Lower Hybrid Waves

P. K. Sharma¹, D. Raju¹, S. K. Pathak¹, R. Srinivasan¹, K. K. Ambulkar¹, P. R. Parmar¹, C. G. Virani¹, J. Kumar¹, S. Sharma¹, C. Singh¹, A. L. Thakur¹, V. L. Tanna¹, U. Prasad¹, Z. Khan¹, D. C. Raval¹, C. N. Gupta¹, V. Balakrishnan¹, S. Nair¹, D. K. Sharma¹, B. Doshi¹, M. M. Vasani¹, K. Mahajan¹, R. Rajpal¹, R. Manchanda¹, K. Asudani¹, M. K. Gupta¹, M. B. Chowdhuri¹, and R. L. Tanna¹

The SST1 and Diagnostic Teams

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: P. K. Sharma, pramod@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1279

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Gamma-Ray Spectrometry for Confined Fast Ion Studies in D³He Plasma Experiments on JET

M. Iliasova¹, A. Shevelev¹, E. Khilkevitch¹, Y. Kazakov², V. Kiptily³, M. Nocente⁴,
L. Giacomelli⁵, T. Craciunescu⁶, A. Dal Molin⁴, D. Rigamonti⁵, M. Tardocchi⁵,
I. Chugunov¹, D. Doinikov¹, G. Gorini⁴, V. Naidenov¹, and I. Polunovsky¹

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

²*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

³*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁴*Università degli Studi di Milano-Bicocca, 20126 Milano, Italy*

⁵*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

⁶*Institute of Atomic Physics (IFA), Magurele-Bucharest, Romania*

Corresponding Author: M. Iliasova, margaritavadimovna@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0635

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Comparison of Particle Transport and Confinement Properties Between the ICRH and NBI Heated Dimensionless Identity Plasmas on JET

T. Tala¹, A. Salmi¹, J. Citrin², E. R. Solano³, R. B. Morales⁴, I. Carvalho⁵, A. Czarnecka⁶,
E. Delabie⁷, F. Eriksson⁸, J. Ferreira⁹, E. Fransson⁸, E. Fransson⁸, L. Horvath¹⁰, P. Jacquet⁴,
D. King¹⁰, E. A. Lerche¹¹, C. Maggi⁴, P. Mantica¹², A. Mariani¹³, M. Marin¹⁴, M. Maslov¹⁰,
S. Menmuir⁴, V. Naulin¹⁵, M. F. F. Nave¹⁶, H. Nordman⁸, C. Perez von Thun⁶,
P. A. Schneider¹⁷, A. Sips¹⁸, and K. Tanaka¹⁹

¹VTT Technical Research Centre of Finland Ltd., Espoo, Finland

²FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

³Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁴Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁵Institute of Plasmas and Nuclear Fusion (IPFN), Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

⁶Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

⁷Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁸Chalmers University of Technology, Göteborg, Sweden

⁹ISFN, Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

¹⁰United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

¹¹LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

¹²Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

¹³Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

¹⁴Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

¹⁵Technical University of Denmark (DTU), Copenhagen, Denmark

¹⁶Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁷Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

¹⁸JET Exploitation Unit, Culham Science Centre, Abingdon, UK

¹⁹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: T. Tala, tuomas.tala@vtt.fi

Synopsis: via Indico server: [IAEA-CN-286-0694](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Control of H/D Isotope Mix by Peripheral Pellets in H-Mode Plasma in JET

A. Boboc¹, C. Giroud¹, C. von Thun², E. A. Lerche³, E. de la Luna², E. Delabie⁴, F. Köchl⁵, G. Tvalashvili¹, H. Weisen¹, J. Buchanan¹, J. Citrin⁶, J. M. Fontdecaba², L. Frassinetti⁷, L. Garzotti¹, M. Marin⁶, M. Maslov¹, **M. Valovic**¹, R. McKean¹, S. Menmuir¹, V. Kiptily¹, and Y. Baranov¹

¹Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

²Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

⁴Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁵Institute of Atomic and Subatomic Physics, Technische Universität Wien, 1040 Vienna, Austria

⁶Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁷KTH Royal Institute of Technology, Stockholm, Sweden

Corresponding Author: A. Boboc, alexandru.boboc@ukaea.uk

Presenting Author: M. Valovic

Synopsis: via Indico server: IAEA-CN-286-0774

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Experimental and Computational Investigations of Alfvén Eigenmode Stability in JET Plasmas Through Active Antenna Excitation

M. Porkolab¹, R. A. Tinguely¹, N. Fil², P. Puglia³, V. Aslanyan⁴, D. Borba⁵, S. Dowson², R. Dumont⁶, A. Fasoli³, M. Fitzgerald², Z. Lin⁷, S. Sharapov², and D. Testa³

¹Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁴University of Dundee, Dundee, Scotland, UK

⁵Institute of Plasmas and Nuclear Fusion (IPFN), Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

⁶Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁷University of California Irvine, CA 92697, USA

Corresponding Author: M. Porkolab, porkolab@psfc.mit.edu

Synopsis: via Indico server: IAEA-CN-286-0889

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Thermal Load Mitigation with JET SPI

U. Sheikh¹, D. Shiraki², R. Sweeney³, S. Jachmich⁴, E. Joffrin⁵, M. Lehnen⁴, and J. Lovell²

The Jet Contributors

¹*École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

²*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

³*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

⁴*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁵*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: U. Sheikh, umar.sheikh@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-0921

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Analysis of the Inter-Species Power Balance in JET Plasmas

H. Weisen¹, A. Patel², C. Giroud², E. Delabie³, J. Varje⁴, J. Flanagan², M. Maslov⁵,
P. Sirén^{6,4}, S. Menmuir², and S. Scott⁷

¹École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴VTT Technical Research Centre of Finland Ltd., Espoo, Finland

⁵Culham Science Centre, Abingdon, UK

⁶Aalto University, Espoo, Finland

⁷Commonwealth Fusion Systems, Cambridge, MA 02139, USA

Corresponding Author: H. Weisen, henri.weisen@epfl.ch

Synopsis: via Indico server: [IAEA-CN-286-0973](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

High Performance ITER-Baseline Discharges in Deuterium with Nitrogen and Neon-Seeding in the JET-ILW

C. Giroud¹, S. Brezinsek², R. A. Pitts³, A. Huber⁴, J. Mailloux¹, A. Chankin⁵, E. Kaveeva⁶, S. Henderson¹, J. Hillesheim⁷, E. A. Lerche⁸, M. Maslov⁹, M. Marin¹⁰, F. Militello^{1,7}, D. Moulton⁷, V. Rozhansky¹¹, I. Veselova⁶, I. Senichenkov⁶, A. Sips¹², S. Voskoboinikov⁶, N. Walkden¹, S. Aleiferis¹³, D. Alegre¹⁴, J. Bernardo¹⁵, M. Brix¹, I. Carvalho¹⁵, I. Coffey¹⁶, J. M. Fontdecaba¹⁷, I. Jecu¹⁸, J. Karhunen¹⁹, E. Litherland-Smith¹, B. Lomanowski²⁰, S. Menmuir⁷, R. B. Morales⁷, T. Pereira¹⁵, D. I. Réfy²¹, S. Silburn¹, B. Viola²², and A. Meigs¹

The Jet Contributors

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Forschungszentrum Jülich GmbH, Jülich, Germany

³International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁴Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁶Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation

⁷Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁸LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

⁹Culham Science Centre, Abingdon, UK

¹⁰Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

¹¹St. Petersburg State Polytechnical University, St. Petersburg, Russian Federation

¹²EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK

¹³National Centre for Scientific Research, "Demokritos", Athens, Greece

¹⁴Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹⁵Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁶Queen's University, Belfast, UK

¹⁷Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹⁸National Institute of Laser, Plasma and Radiation Physics (INFLPR), Bucharest, Romania

¹⁹Aalto University, Espoo, Finland

²⁰Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

²¹Centre for Energy Research (EK), Hungarian Academy of Sciences, Budapest, Hungary

²²Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

Corresponding Author: C. Giroud, carine.giroud@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-0977

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Termination of Discharges in High Performance Scenarios in JET

C. Sozzi¹, A. Fanni², A. Pau³, A. Kappatou⁴, B. Cannas², C. Stuart⁵, C. Challis⁵, C. Maggi⁵,
 D. Valcarcel⁵, D. Ferreira⁶, D. Van Eester⁷, D. Frigione⁸, E. A. Lerche⁹, E. de la Luna¹⁰,
 E. Alessi¹, E. Joffrin¹¹, F. Rimini¹², G. Sias², I. Carvalho⁶, J. Hobirk⁴, L. Piron⁵,
 L. Garzotti^{13,5}, M. Lennholm¹³, O. Sauter¹², P. Lomas⁵, S. Gerasimov⁵, and S. Aleiferis¹⁴

The Jet Contributors

¹*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

²*Università di Cagliari, 09124 Cagliari CA, Italy*

³*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

⁴*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁵*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁶*Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal*

⁷*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

⁸*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

⁹*LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium*

¹⁰*Laboratorio Nacional de Fusión (LNF),*

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

¹²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

¹³*European Commission, Brussels, Belgium*

¹⁴*National Centre for Scientific Research, "Demokritos", Athens, Greece*

Corresponding Author: C. Sozzi, carlo.sozzi@istp.cnr.it

Synopsis: via Indico server: IAEA-CN-286-0978

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Key Contributions of ICRF Heating in Support of Plasma Scenario Development and Fast Ion Studies on JET and ASDEX-Upgrade

M. J. Mantsinen^{1,2}, R. Bilato³, V. Bobkov³, J. Galdon-Quiroga³, D. Gallart², M. García Muñoz⁴, J. Gonzalez-Martin⁴, P. Jacquet⁵, A. Kappatou³, Y. Kazakov⁶, V. Kiptily⁷, E. A. Lerche⁸, P. Mantica⁹, J. Manyer², M. Nocente¹⁰, R. Ochoukov³, T. Pütterich³, O. Sauter¹¹, P. A. Schneider³, G. Tardini³, D. Van Eester⁶, S. Sharapov⁵, and M. Weiland³

The Jet Contributors, ASDEX-Upgrade and EUROfusion MST1 Teams

¹Catalan Institution for Research and Advanced Studies (ICREA), Spain

²Centro Nacional de Supercomputación (BSC), Barcelona, Spain

³Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁴Universidad de Sevilla, Seville, Spain

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

⁷United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁸LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

⁹Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

¹⁰Università degli Studi di Milano–Bicocca, 20126 Milano, Italy

¹¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: M. J. Mantsinen, mervi.mantsinen@bsc.es

Synopsis: via Indico server: IAEA-CN-286-0991

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Understanding the Role of Edge Plasma Physics in the H-Mode Density Limit on the JET-ILW

H. Sun^{1,2}, R. Goldston³, A. Huber⁴, X. Xu⁵, J. Flanagan^{1,2}, D. C. McDonald^{1,2},
E. de la Luna⁶, J. Harrison^{1,2}, F. Militello^{1,2}, and D. Moulton^{1,2}

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁵Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁶Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

Corresponding Author: H. Sun, hongjuan.sun@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1043

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

SOL Profile and Fluctuations in Different Divertor Recycling Conditions in H-Mode Plasmas

N. Vianello¹, N. Walkden², M. Dunne³, B. Lomanowski⁴, E. Wolfrum³, C. Tsui⁵, M. Griener³, B. Tál³, D. I. Réfy⁶, D. Brida³, I. Cziegler⁷, O. Février⁸, H. De Oliveira⁸, M. Agostini¹, S. Aleiferis⁹, M. Bernert³, J. Boedo¹⁰, M. Brix², D. Carralero¹¹, I. Carvalho¹², L. Frassinetti¹³, C. Giroud², A. Hakola¹⁴, A. Huber¹⁵, J. Karhunen¹⁶, A. Karpushov⁸, B. Labit⁸, A. Meigs², V. Naulin¹⁷, T. Pereira¹², H. Reimerdes⁸, and C. Theiler⁸

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

³*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁴*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

⁵*University of California San Diego, CA 92093, USA*

⁶*Centre for Energy Research (EK), Hungarian Academy of Sciences, Budapest, Hungary*

⁷*York Plasma Institute, University of York, Heslington, UK*

⁸*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

⁹*National Centre for Scientific Research, "Demokritos", Athens, Greece*

¹⁰*University of California Irvine, CA 92697, USA*

¹¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

¹²*Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal*

¹³*KTH Royal Institute of Technology, Stockholm, Sweden*

¹⁴*VTT Technical Research Centre of Finland Ltd., Espoo, Finland*

¹⁵*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

¹⁶*Aalto University, Espoo, Finland*

¹⁷*Technical University of Denmark (DTU), Copenhagen, Denmark*

Corresponding Author: N. Vianello, nicola.vianello@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1051

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Facets of Alpha Particle Physics Anticipated in D-³He Plasmas in Preparation for Deuterium-Tritium at the Joint European Torus

M. Nocente¹, Y. Kazakov², J. Garcia³, V. Kiptily⁴, J. Ongena², Y. Baranov⁴, A. Bierwage⁵, T. Craciunescu⁶, A. Dal Molin¹, M. Dreval⁷, R. Dumont⁸, J. Eriksson⁹, L. Giacomelli¹⁰, C. Giroud⁴, G. Gorini¹, E. Khilkevitch¹¹, K. Kirov⁴, M. Iliasova¹¹, P. Lauber¹², M. J. Mantsinen^{13,14}, F. Nabais¹⁵, M. F. F. Nave¹⁵, E. Panontin¹, D. Rigamonti¹⁰, A. Sahlberg⁹, M. Salewski¹⁶, A. Shevelev¹¹, K. Shinohara⁵, P. Sirén^{17,18}, Ž. Štancar¹⁹, S. Sumida²⁰, M. Tardocchi¹⁰, J. Varje¹⁸, H. Weisen²¹, and A. Zohar¹⁹

¹Università degli Studi di Milano-Bicocca, 20126 Milano, Italy

²Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁶Institute of Atomic Physics (IFA), Magurele-Bucharest, Romania

⁷National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

⁸Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁹Uppsala University, Uppsala, Sweden

¹⁰Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

¹¹Ioffe Institute, 194021, St. Petersburg, Russian Federation

¹²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

¹³Catalan Institution for Research and Advanced Studies (ICREA), Spain

¹⁴Centro Nacional de Supercomputación (BSC), Barcelona, Spain

¹⁵Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁶Technical University of Denmark (DTU), Copenhagen, Denmark

¹⁷Aalto University, Espoo, Finland

¹⁸VTT Technical Research Centre of Finland Ltd., Espoo, Finland

¹⁹Jožef Stefan Institute, 1000 Ljubljana, Slovenia

²⁰National Institutes for Quantum and Radiological Science and Technology (QST),

Naka Fusion Institute, Naka-shi, Ibaraki-ken, Japan

²¹EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK

Corresponding Author: M. Nocente, massimo.nocente@mib.infn.it

Synopsis: via Indico server: IAEA-CN-286-1106

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Intrinsic Rotation Reversals of JET and DIII-D Plasmas in Deuterium and Hydrogen

M. F. F. Nave¹, E. Delabie², M. Barnes³, J. Bernardo¹, F. J. Casson⁴, C. Chrystal⁵, J. Ferreira¹, J. Garcia⁶, B. A. Grierson⁷, B. Lomanowski², A. Mauriyya¹, J. S. deGrassie⁵, F. Parra⁸, and M. Romanelli⁹

The Jet Contributors and the DIII-D Team

¹*Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal*

²*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

³*Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Oxford, UK*

⁴*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁵*General Atomics, San Diego, CA 92186, USA*

⁶*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁷*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁸*University of Oxford, Oxford, UK*

⁹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

Corresponding Author: M. F. F. Nave, mfn@ipfn.ist.utl.pt

Synopsis: via Indico server: IAEA-CN-286-1226

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Frequency Slowly-Sweeping Alfvénic Modes on the HL-2A Tokamak

P. Shi¹, W. Chen², and Z. Wang¹

¹*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

²*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: P. Shi, shipw@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0789

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Enhanced Confinement and Thermal Transport Decoupling in H-Mode Plasmas with Impurity Seeding

W. Zhong¹, X. Zou², G. Xiao¹, A. Liang², L. Liu¹, X. He¹, D. Yu¹, M. Jiang¹, Z. Yang¹, K. Fang¹, Z. Shi¹, J. Gao¹, J. Li³, M. K. Han³, J. Dong¹, Z. Wang³, C. Chen¹, J. Yin¹, B. Feng¹, C. Liu¹, J. Wen¹, P. Shi³, Y. Zhang¹, N. Wu¹, T. Wang¹, X. Song¹, Y. Liu¹, Q. Yang¹, L. Yan¹, X. Ding¹, M. Xu¹, and X. Duan¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China

Corresponding Author: W. Zhong, zhongwl@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1107

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High- β_N Experiments and Corresponding MHD Activities in the HL-2A Tokamak

W. Chen¹, L. Yu¹, M. Xu¹, X. Ji¹, Z. Shi¹, J. Li¹, X. Ding¹, X. He¹, Y. Li¹, M. Jiang¹, S. Gong¹, J. Wen¹, Z. Li¹, Y. Shi¹, Z. Yang¹, W. Zhong¹, A. Sun¹, J. Cao¹, Q. Yang¹, Y. Liu¹, L. Yan¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: W. Chen, chenw@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1111

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Evidence of Nonlinear Avalanche Dynamics of Energetic Particle Modes

L. Yu¹, F. Zonca², L. Chen³, Z. Qiu³, X. Ding¹, W. Chen¹, X. Ji¹, T. Wang⁴, T. Wang¹, Z. Shi¹,
B. Yuan¹, Y. Liu¹, and M. Xu¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

³Institute for Fusion Theory and Simulation (IFTS),

Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China

⁴College of Physics and Optoelectronic Engineering (CIOEE),

Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China

Corresponding Author: L. Yu, yulm@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1123

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Edge Coherent Mode Providing Continuous Transport During ELM Mitigation with $N=1$ RMP in HL-2A H-Mode Plasma

Y. Liu¹, T. Sun¹, X. Ji¹, Y. Liu², R. Ke¹, J. Gao¹, W. Deng¹, N. Wu¹, M. Xu¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: Y. Liu, yiliu@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1139

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Combined Effects of Turbulence, MHD Activity and Sawtooth Crashes on Particle Transport in L-Mode Discharges on HL-2A Tokamak

D. Li¹, L. Qi², Y. Liu³, Y. Dong¹, W. Deng¹, Z. C. Yang¹, Y. G. Li¹, Y. H. Chen¹, W. Zhong¹, M. K. Han¹, K. Zhang¹, Y. Zhang¹, J.-M. Kwon², L. Yan¹, Z. Shi¹, Y. Liu¹, Q. W. Yang¹, and M. Xu¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

³General Atomics, San Diego, CA 92186, USA

Corresponding Author: D. Li, lid@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1147

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Comparative Study of Phase Dynamics in Reynolds Stress and Particle Flux in the Edge Turbulence of HL-2A Tokamak

T. Long¹, P. Diamond², M. Xu¹, R. Ke¹, L. Nie¹, W. Zhong¹, J. Wen¹, X. Ji¹, T. Sun¹, L. Yan¹, B. Li¹, X. Song¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*University of California San Diego, CA 92093, USA*

Corresponding Author: T. Long, longt@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1151

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Mechanism Research of Double Strike Points of the Divertor Particle Flux in HL-2A ECRH Plasmas

N. Wu¹, J. Cheng², H. Du¹, L. Yan¹, Z. Huang¹, W. Wang¹, J. Xu¹, J. Gao¹, Z. Shi¹, Y. Liu¹,
Q. W. Yang¹, J. Dong¹, and M. Xu¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*Institute of Fusion Science, School of Physical Science and Technology, Southwest Jiaotong University, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: N. Wu, wuna@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1171

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ELM Suppression and Flow Damping with $N=1$ RMP Fields in Tokamaks Plasmas

N. Zhang¹, Z. Yang¹, Y. Liu¹, Y. Liu², T. Sun¹, X. Ji¹, P. Piovesan³, V. Igochine⁴, D. Yu¹, S. Wang¹, G. Dong¹, R. Ke¹, J. Gao¹, W. Deng¹, N. Wu¹, Q. Yang¹, M. Xu¹, and X. Duan¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²General Atomics, San Diego, CA 92186, USA

³Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: N. Zhang, zhangn@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1189

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Dual Effects of the Impurity Seeding by LBO on the Pedestal Instabilities

G. Xiao¹, X. Zou², W. Zhong¹, M. Xu¹, Y. Zhang¹, D. Mazon³, C. Dong¹, J. Dong¹, K. Fang¹, B. Feng¹, J. Gao¹, M. K. Han⁴, X. He¹, J. Li⁴, Y. G. Li¹, A. Liang¹, X. Song¹, Z. Shi¹, P. Sun¹, K. Zhang¹, Z. C. Yang¹, and X. Duan¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

³Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China

Corresponding Author: G. Xiao, xiaogl@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1208

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of LHCD and LBO on Runaway Electron Dynamics During Disruptions in the HL-2A Tokamak

Y. Zhang¹, D. Mazon², Y. Dong¹, J. Zhang¹, J. Gao¹, K. Zhang¹, S. Ping¹, X. Bai¹, X. Zou³, W. Zhong¹, C. Chen¹, M. Jiang¹, Y. Liu¹, M. Isobe⁴, W. Chen¹, X. Ji¹, Y. G. Li¹, X. Li¹, X. Song¹, X. Song¹, X. Ding¹, Z. Shi¹, M. Xu¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: Y. Zhang, zhangyp@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1239

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effect of ECRH and LHW on Pedestal Instabilities in Type-I ELMy H-Mode of the HL-2A Tokamak

C. Liu¹, J. Wen¹, W. Zhong¹, Z. Shi¹, X. He¹, J. Wang¹, Z. Yang¹, K. Fang¹, N. Wu¹, J. Gao¹, R. Ke¹, M. Jiang¹, Y. Li², S. Chen², Y. Wang¹, Z. Hou¹, Z. Feng¹, Y. Huang¹, F. Xia¹, M. Huang¹, S. Wang¹, X. Song¹, X. Ding¹, D. Yu¹, Y. Liu¹, Q. W. Yang¹, M. Xu¹, and X. Duan¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Sichuan University, Chengdu, Sichuan, People's Republic of China

Corresponding Author: C. Liu, liuchunhua@swip.ac.cn

Presenting Author: J. Wen

Synopsis: via Indico server: IAEA-CN-286-1244

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Analysis of Nonlinear Mode-Mode Interaction using Hilbert Transform on HL-2A

L. Zang¹, S. Ohshima², Y. Qu¹, P. Shi¹, W. Zhong¹, L. Yan¹, D. Yu¹, Z. Shi¹, Y. Liu¹, and Q. Yang¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

Corresponding Author: L. Zang, zanglinge@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1272

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Power Exhaust by Core Radiation at the Compass Tokamak

M. Komm¹, D. Mancini², M. Morbey³, J. Cavalier¹, J. Adamek¹, M. Bernert⁴, P. Bilkova¹, P. Bohm¹, M. Hron¹, M. Jerab⁵, M. Imříšek¹, D. Naydenkova¹, R. Panek¹, M. Sos¹, and P. Vondracek¹

The EUROfusion MST1 Team

¹*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

²*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

³*Eindhoven University of Technology, Eindhoven, The Netherlands*

⁴*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁵*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: M. Komm, komm@ipp.cas.cz

Synopsis: via Indico server: IAEA-CN-286-1073

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Rotation Studies Carried Out in the TCABR Tokamak and its Comparison with Neoclassic Theory

T. Fernandes¹, J. H. Severo², G. Canal², A. Y. Dnestrovskiy³, G. Ronchi², M. Y. Kantor⁴, M. Y. Ikeda¹, F. do Nascimento⁵, R. Galvao², C. S. Martins², V. Bellintani, Jr.², A. M. Oliveira¹, J. I. Elizondo¹, W. P. de Sá¹, F. A. F. Albuquerque², I. C. Nascimento¹, and M. Tendler⁶

¹*Plasma Physics Laboratory, Institute of Physics, University of São Paulo, São Paulo, Brazil*

²*University of São Paulo, São Paulo, Brazil*

³*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

⁴*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

⁵*Gleb Wataghin Physics Institute, State University of Campinas, Campinas SP CEP 13083-870, Brazil*

⁶*Alfvén Laboratory, KTH Royal Institute of Technology, Stockholm, Sweden*

Corresponding Author: T. Fernandes, tiago2.fernandes@usp.br

Presenting Author: J. H. Severo

Synopsis: via Indico server: IAEA-CN-286-1184

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Runaway Electron Dynamics at the ASDEX-Upgrade Tokamak During Impurity Injection using Fast Gamma-Ray Spectrometry

A. Shevelev¹, E. Khilkevitch¹, M. Iliasova¹, M. Nocente^{2,3}, G. Pautasso⁴, G. Papp⁴, A. Dal Molin², S. P. Pandya⁵, V. V. Plyusnin⁶, L. Giacomelli⁷, G. Gorini^{2,3}, E. Panontin², D. Rigamonti⁷, G. Tardini⁴, M. Tardocchi⁷, A. Bogdanov¹, I. Chugunov¹, D. Doinikov¹, V. Naidenov¹, and I. Polunovsky¹

The ASDEX-Upgrade and EUROfusion MST1 Teams

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

²*Università degli Studi di Milano-Bicocca, 20126 Milano, Italy*

³*Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy*

⁴*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁵*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

⁶*Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal*

⁷*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

Corresponding Author: A. Shevelev, shevelev.cycla@mail.ioffe.ru

Synopsis: via Indico server: IAEA-CN-286-0665

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Gross and Net Erosion Balance of Plasma-Facing Components in Full-W Tokamaks

A. Hakola¹, J. Likonen¹, A. Lahtinen², T. Vuoriheimo², M. Groth³, H. Kumpulainen³, M. Balden⁴, K. Krieger⁴, T. Schwarz-Selinger⁴, S. Brezinsek⁵, M. Kelemen⁶, S. Markelj⁶, A. Uccello⁷, E. Vassallo⁷, D. Dellasega⁸, M. Passoni⁸, M. Sala⁸, E. Tsitrone⁹, and E. Bernard⁹

¹VTT Technical Research Centre of Finland Ltd., Espoo, Finland

²University of Helsinki, 00100 Helsinki, Finland

³Aalto University, Espoo, Finland

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁵Forschungszentrum Jülich GmbH, Jülich, Germany

⁶Jozef Stefan Institute, 1000 Ljubljana, Slovenia

⁷Istituto per la Scienza e Tecnologia dei Plasm (ISTP), CNR, 20125 Milan, Italy

⁸Politecnico di Milano, 20133 Milano, Italy

⁹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

Corresponding Author: A. Hakola, antti.hakola@vtt.fi

Synopsis: via Indico server: IAEA-CN-286-0735

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Dependence of Confinement on the Isotope Mass in the Core and the Edge of AUG and JET H-Mode Plasmas

P. A. Schneider¹, N. Bonanomi¹, C. Angioni¹, F. Auriemma², M. Cavedon¹, C. Challis³, P. David¹, E. Delabie⁴, M. Dunne¹, R. Fischer¹, L. Frassinetti⁵, C. Giroud⁶, P. Hennequin⁷, J. Hobirk¹, L. Horvath⁶, A. Kappatou¹, D. Keeling³, B. Kurzan¹, M. Lennholm⁸, B. Lomanowski⁶, C. Maggi³, M. Maslov⁶, R. M. McDermott¹, U. Plank¹, T. Pütterich¹, F. Ryter¹, A. Thorman³, A. Sips⁹, M. Weiland¹, and M. Willensdorfer¹

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

³Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁴Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁵KTH Royal Institute of Technology, Stockholm, Sweden

⁶United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁷Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France

⁸European Commission, Brussels, Belgium

⁹JET Exploitation Unit, Culham Science Centre, Abingdon, UK

Corresponding Author: P. A. Schneider, philip.schneider@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1084

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Applications of 3-Ion ICRF Schemes on ASDEX-Upgrade and JET in Support of ITER

Y. Kazakov¹, V. Bobkov², J. Garcia³, M. García Muñoz⁴, V. Kiptily⁵, M. J. Mantsinen^{6,7}, M. Nocente⁸, J. Ongena¹, S. Pinches⁹, M. Salewski¹⁰, M. Schneider⁹, P. A. Schneider², Ž. Štancar¹¹, H. Weisen¹², Y. Baranov⁵, M. Baruzzo¹³, A. Bierwage¹⁴, R. Bilato², R. Coelho¹⁵, T. Craciunescu¹⁶, M. Dreval¹⁷, R. Dumont¹⁸, J. Eriksson¹⁹, J. Galdon-Quiroga², L. Giacomelli²⁰, C. Giroud⁵, J. Gonzalez-Martin⁴, A. Kappatou², K. Kirov⁵, P. Lauber², M. Lennholm²¹, S. Mazzi²², F. Nabais¹⁵, M. F. F. Nave¹⁵, R. Ochoukov², U. Plank², D. Rigamonti²⁰, A. Sahlberg¹⁹, S. Sharapov²³, K. Shinohara¹⁴, S. Sumida²⁴, J. Varje²⁵, and M. Weiland²

The Jet Contributors, ASDEX-Upgrade and EUROfusion MST1 Teams

¹Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Universidad de Sevilla, Seville, Spain

⁵United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁶Catalan Institution for Research and Advanced Studies (ICREA), Spain

⁷Centro Nacional de Supercomputación (BSC), Barcelona, Spain

⁸Università degli Studi di Milano-Bicocca, 20126 Milano, Italy

⁹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

¹⁰Technical University of Denmark (DTU), Copenhagen, Denmark

¹¹Jožef Stefan Institute, 1000 Ljubljana, Slovenia

¹²Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

¹³ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

¹⁴National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

¹⁵Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal

¹⁶Institute of Atomic Physics (IFA), Magurele-Bucharest, Romania

¹⁷National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

¹⁸Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

¹⁹Uppsala University, Uppsala, Sweden

²⁰Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

²¹European Commission, Brussels, Belgium

²²Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS,

Aix-Marseille Université, F-13013 Marseille, France

²³Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

²⁴National Institutes for Quantum and Radiological Science and Technology (QST),

Naka Fusion Institute, Naka-shi, Ibaraki-ken, Japan

²⁵VTT Technical Research Centre of Finland Ltd., Espoo, Finland

Corresponding Author: Y. Kazakov, yevgen.kazakov@rma.ac.be

Synopsis: via Indico server: IAEA-CN-286-1231

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Lithium Wall Conditioning Techniques in ADITYA-U Tokamak for Impurity and Fuel Control

K. Jadeja¹, J. Ghosh¹, K. Patel¹, K. Patel¹, R. L. Tanna¹, B. Arambhadiya¹, T. Macwan¹, R. Manchanda¹, M. B. Chowdhuri¹, M. Shah¹, N. Yadava², S. Patel³, N. K. Ramaiya¹, K. Shah³, B. K. Shukla¹, S. Aich¹, R. Kumar¹, V. K. Panchal¹, J. Raval¹, M. Kumar¹, U. K. Nagora¹, P. Atrey¹, S. K. Pathak¹, R. Rajpal¹, K. Tahiliani¹, M. V. Gopalakrishna¹, D. Kumawat¹, M. M. Makwana¹, K. S. Shah¹, S. Gupta⁴, C. N. Gupta¹, V. Balakrishnan¹, P. K. Chattopadhyay¹, and B. R. Kataria⁵

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Gujarat University, Navrangpura, Ahmedabad 380 009, India*

³*Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India*

⁴*Indian Institute of Technology, Roorkee, Uttarakhand, India*

⁵*Department of Nano Science and Advanced Materials, Saurashtra University, Rajkot, Gujarat, India*

Corresponding Author: K. Jadeja, kumarpal@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1210

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigation of Toroidal Rotation Reversal in Impurities Seeding ADITYA-U Tokamak Plasmas

M. B. Chowdhuri¹, G. Shukla², J. Ghosh¹, K. Shah², R. L. Tanna¹, K. Jadeja¹,
R. Manchanda¹, N. Yadava³, N. K. Ramaiya¹, S. Patel², K. Patel¹, T. Macwan¹,
U. K. Nagora¹, S. K. Pathak¹, J. Raval¹, M. K. Gupta¹, M. V. Gopalakrishna¹, K. Tahiliani¹,
R. Kumar¹, S. Aich¹, S. Dalui¹, K. Singh¹, N. K. Bisai¹, V. Balakrishnan¹, and C. N. Gupta¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India*

³*Gujarat University, Navrangpura, Ahmedabad 380 009, India*

Corresponding Author: M. B. Chowdhuri, malay@ipr.res.in

Presenting Author: J. Ghosh

Synopsis: via Indico server: [IAEA-CN-286-1271](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Observation of Electrostatic Confinement of Runaway Electrons using a Biased Electrode in ADITYA-U Tokamak

T. Macwan¹, J. Ghosh¹, H. Raj¹, K. Singh¹, S. Dolui¹, D. Nath², R. Ganesh¹, R. L. Tanna¹, R. Kumar¹, S. Aich¹, K. Jadeja¹, K. Patel¹, P. Edappala¹, V. K. Panchal¹, J. Raval¹, S. Purohit¹, M. K. Gupta¹, R. Manchanda¹, M. B. Chowdhuri¹, U. K. Nagora¹, P. Atrey¹, S. K. Jha¹, D. Raju¹, and R. Pal³

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Indian Institute of Technology, Kanpur, Uttar Pradesh, India*

³*Saha Institute of Nuclear Physics, Kolkata, India*

Corresponding Author: T. Macwan, tanmay.macwan@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1284

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Novel Concept for Disruption Mitigation in the ADITYA-U Tokamak by Fast Time Response Electromagnetic Driven Pellet Impurity Injector

J. Ghosh¹, S. Pahari², B. Doshi¹, R. L. Tanna¹, K. Jadeja¹, K. Patel¹, R. Kumar¹, T. Macwan¹, S. Aich¹, D. Kumawat¹, M. M. Makwana¹, K. S. Shah¹, S. Gupta¹, B. V. Nair¹, C. N. Gupta¹, V. K. Panchal¹, P. Edappala¹, M. Shah¹, S. Aditya Nandan², R. P.P.², P. K. Maurya², S. K. Jha², M. K. Raghavendra², N. Shiv², N. Belli², S. Mahar², S. V.V. Illa², H. Hemani², B. Kadia¹, N. Yadava³, M. B. Chowdhuri¹, R. Manchanda¹, G. Shukla⁴, N. K. Ramaiya¹, J. Raval¹, M. Kumar¹, U. K. Nagora¹, S. K. Pathak¹, K. Tahiliani¹, P. K. Chattopadhyay¹, P. Chaudhuri¹, M. Padivattathumana^{5,1}, R. Goswami¹, A. Sen¹, R. Pal⁶, and S. Chaturvedi¹

¹Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

²Bhabha Atomic Research Centre (BARC), Mumbai, India

³Gujarat University, Navrangpura, Ahmedabad 380 009, India

⁴Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India

⁵International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India

⁶Saha Institute of Nuclear Physics, Kolkata, India

Corresponding Author: J. Ghosh, jghosh@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1290

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigation of Self-Absorbed Lithium Spectral Line Emissions During Li_2TiO_3 Injection in ADITYA-U Tokamak

N. Yadava¹, J. Ghosh², M. B. Chowdhuri², R. Manchanda², R. Dey², S. K. Punchithaya³, Ismayil⁴, N. K. Ramaiya², S. Pahari⁵, B. Doshi², P. Chaudhuri², T. Macwan², S. Aich², R. Kumar², R. L. Tanna², K. Jadeja², K. Patel², S. Patel⁶, G. Shukla⁶, S. Dolui², K. Singh², D. Kumawat², and C. N. Gupta²

¹Gujarat University, Navrangpura, Ahmedabad 380 009, India

²Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

³The National Institute of Engineering, Mysore, Karnataka, India

⁴Manipal Institute of Technology, Karnataka, India

⁵Bhabha Atomic Research Centre (BARC), Mumbai, India

⁶Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India

Corresponding Author: N. Yadava, nandini7754@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1291

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Initial Results of Plasma Potential and its Fluctuation Measurements in SOL Region of ADITYA-U Tokamak by Laser Heated Emissive Probe

A. Kanik¹, A. Sarma², J. Ghosh³, T. Macwan³, M. Shah³, R. L. Tanna³, J. Raval³, U. K. Nagora³, S. Pandya³, P. Pandit³, K. Jadeja³, K. Patel³, N. Yadava¹, N. K. Ramaiya³, S. Patel⁴, R. Manchanda³, M. B. Chowdhuri³, R. Kumar³, K. Singh³, S. Aich³, S. Dolui³, and V. K. Panchal³

¹Gujarat University, Navrangpura, Ahmedabad 380 009, India

²North East Centre for Technology Application and Reach (NECTAR), Shillong-793003, Meghalaya, India

³Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

⁴Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India

Corresponding Author: A. Kanik, abhakanik@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1312

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Novel Approach to Estimate Plasma Current Density Profile with Magnetic Probes in ADITYA-U

S. Aich¹, J. Ghosh¹, S. Patel², T. Macwan¹, D. Kumawat¹, R. Kumar¹, R. L. Tanna¹, D. Raju¹, S. K. Jha¹, P. K. Chattopadhyay¹, P. Gautam¹, P. Edappala¹, K. Jadeja¹, K. Patel¹, K. Singh¹, S. Dolui¹, and J. Thakkar³

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India*

³*St. Xavier's College, Ahmedabad, Gujarat, India*

Corresponding Author: S. Aich, suman.aich@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1323

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

H-Mode Physics Studies on TCV Supported by the EUROfusion Pedestal Database

B. Labit¹, S. Coda¹, B. Duval¹, A. Merle¹, L. Porte¹, O. Sauter¹, U. Sheikh¹, M. Dunne²,
L. Frassinetti³, and R. Scannell⁴

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³KTH Royal Institute of Technology, Stockholm, Sweden

⁴Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: B. Labit, benoit.labit@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-0883

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ITER Baseline Scenario Investigations on TCV and Comparison with AUG

O. Sauter¹, T. Pütterich², P. Bagnato¹, V. Bobkov², Y. Camenen³, S. Coda¹, M. Dunne², F. Eriksson⁴, E. Fransson⁴, A. Karpushov¹, B. Labit¹, P. Lang², M. J. Mantsinen^{5,6}, M. Maraschek², R. M. McDermott², A. Merle¹, P. Neubert², J. Stoiber², W. Suttrop², M. Vallar¹, I. Voitsekhovitch⁷, F. Widmer⁸, and M. Willensdorfer²

The ASDEX-Upgrade, TCV and EUROfusion MST1 Teams

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Centre national de la recherche scientifique (CNRS), 75016 Paris, France

⁴Chalmers University of Technology, Göteborg, Sweden

⁵Catalan Institution for Research and Advanced Studies (ICREA), Spain

⁶Centro Nacional de Supercomputación (BSC), Barcelona, Spain

⁷Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁸Aix-Marseille Université, Marseille, France

Corresponding Author: O. Sauter, olivier.sauter@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-0887

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigating the Role of Plasma-Atom/Molecule Interactions on Power, Particle and Momentum Balance During Detachment

K. Verhaegh¹, B. Lipschultz², J. Harrison¹, B. Duval³, A. Fil⁴, D. Gahle⁵, D. Moulton¹, A. Perek⁶, S. Henderson⁷, C. Theiler³, A. Thornton¹, and M. Wensing⁸

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*University of York, Heslington, UK*

³*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*University of Strathclyde, Glasgow, UK*

⁶*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

⁷*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁸*École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

Corresponding Author: K. Verhaegh, kevin.verhaegh@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-0908

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High Density, High Confinement, Power Exhaust Compatible H-Mode Regime in TCV and ASDEX-Upgrade

M. Faitsch¹, G. Harrer², T. Eich¹, E. Wolfrum¹, M. Bernert¹, D. Brida¹, P. David¹,
M. Dunne¹, M. Griener¹, B. Labit³, P. Manz¹, D. Silvagni¹, and U. Stroth¹

The ASDEX-Upgrade, TCV and EUROfusion MST1 Teams

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Institute of Atomic and Subatomic Physics, Technische Universität Wien, 1040 Vienna, Austria

³Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: M. Faitsch, michael.faitsch@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0970

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Integrated Plasma State Reconstruction, Off-Normal Event Handling and Control, with Application to TCV and ASDEX-Upgrade

F. Felici¹, C. Angioni², T. Blanken³, N. Bonanomi², T. Bosman³, F. Carpanese¹, R. Fischer², C. Galperti¹, L. Giannone², M. Kong¹, O. Kudlacek², M. Maraschek², A. Merle¹, J.-M. Moret¹, S. Van Mulders¹, A. Pau¹, E. Poli², M. Reich², N. Rispoli⁴, O. Sauter¹, B. Sieglin², C. Sozzi⁴, W. Treutterer², N. M. T. Vu¹, and M. Weiland²

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Eindhoven University of Technology, Eindhoven, The Netherlands

⁴Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

Corresponding Author: F. Felici, federico.felici@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-1352

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Investigation of Scattering of Lower Hybrid Waves by Tokamak Boundary Plasmas on Alcator C-MOD and EAST

S. G. Baek¹, B. Biswas¹, P. T. Bonoli¹, W. Choi¹, B. J. Ding¹, M. H. Li¹, Y. C. Li¹, F. M. Poli¹, S. Shiraiwa¹, G. M. Wallace¹, M. Wang¹, Y. F. Wang¹, C. B. Wu¹, and G. H. Yan¹

¹Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

Corresponding Author: S. G. Baek, sgbaek@psfc.mit.edu

Synopsis: via Indico server: IAEA-CN-286-0776

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Control and Safe Discharge Termination During Disruption in Tokamaks

P. Savrukhin¹, E. Shestakov¹, and A. Khramenkov¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: P. Savrukhin, p.savrukhin@iterrf.ru

Synopsis: via Indico server: IAEA-CN-286-0696

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of the ECR-Heating Influence on the Anomalous Transport of Tungsten Ions in T-10 Plasma

I. Zemtsov¹, V. Krupin¹, M. Nurgaliev¹, L. Klyuchnikov¹, A. Nemets¹, A. Y. Dnestrovskiy¹, T. Myalton¹, D. Sarychev¹, G. Subbotin¹, D. Sergeev¹, N. A. Solovev¹, and A. Borschegovskiy¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: I. Zemtsov, ivan.zemtcov@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1313

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Spontaneous and Triggered Abrupt and Nonlocal Reduction of Electron Heat and Density Fluxes and ITB Formation in T-10 Tokamak Plasmas with ECRH/ECCD

S. Neudatchin¹, A. Kyuanov¹, A. Borshegovskiy¹, and I. Pimenov¹

¹*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: S. Neudatchin, sneudat@yandex.ru

Synopsis: via Indico server: IAEA-CN-286-1326

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Ion Cyclotron Emission from the Ohmically Heated Plasma in the Tuman-3M Tokamak

S. Lebedev¹, G. Abdullina¹, L. Askinazi¹, A. Belokurov¹, F. Chernyshev¹, V. Kornev¹,
A. Melnik¹, A. Smirnov¹, A. Tukachinsky¹, and N. Zhubr¹

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

Corresponding Author: S. Lebedev, sergei.lebedev@mail.ioffe.ru

Synopsis: via Indico server: IAEA-CN-286-1181

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Ion Cyclotron Emission from NBI Heated Plasma in the Tuman-3M Tokamak

L. Askinazi¹, G. Abdullina¹, A. Belokurov¹, M. Blekhshtein¹, V. Kornev¹, S. Krikunov¹, S. Lebedev¹, D. Razumenko¹, A. Smirnov¹, A. Tukachinsky¹, and N. Zhubr¹

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

Corresponding Author: L. Askinazi, leonid.askinazi@mail.ioffe.ru

Synopsis: via Indico server: IAEA-CN-286-1182

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Isotope Effect in Turbulent Transport in High Density FT-2 Tokamak Discharges

D. Kouprienko¹, A. Altuhov¹, L. Askinazi¹, A. Belokurov¹, L. Esipov¹, A. Gurchenko¹, E. Gusakov¹, V. Ivanov¹, S. Janhunen², O. Kaledina¹, S. Lashkul¹, S. Shatalin¹, A. Sidorov¹, N. Tropin¹, T. Kiviniemi³, and L. Chôné³

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

²*University of Texas at Austin, Austin, TX 78712, USA*

³*Aalto University, Espoo, Finland*

Corresponding Author: D. Kouprienko, d.kouprienko@advexp.org

Synopsis: via Indico server: IAEA-CN-286-0678

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Strategies for First Wall Power Flux Management During Plasma Current Ramp-Up on ITER

R. A. Pitts¹, J. Coburn¹, Y. Gribov¹, G. Severino¹, F. J. Fuentes¹, G. Vayakis¹, H. Anand², V. Amoskov³, M. Brank⁴, S. Carpentier-Chouchana¹, M. L. Dubrov¹, A. A. Kavin³, R. R. Khayrutdinov⁵, E. Lamzin³, A. Loarte¹, V. E. Lukash⁵, L. Kos⁴, A. R. Raffray¹, P. C. Stangeby⁶, and S. Sytchevsky³

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²General Atomics, San Diego, CA 92186, USA

³D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation

⁴LECAD Laboratory, University of Ljubljana, 1000 Ljubljana, Slovenia

⁵National Research Centre "Kurchatov Institute", Moscow, Russian Federation

⁶Institute for Aerospace Studies, University of Toronto, Toronto, ON M5S-1A1, Canada

Corresponding Author: R. A. Pitts, richard.pitts@iter.org

Synopsis: via Indico server: IAEA-CN-286-1186

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Optimization of Lower Hybrid Wave Coupling for the WEST LHCD Launchers

A. Liang¹, L. Delpech¹, A. Ekedahl¹, M. Goniche¹, J. Hillairet¹, R. Nouailletas¹, and X. Regal-Mezin¹

The WEST (Tore Supra) Team

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: A. Liang, anshu.liang@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0963

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Measuring and Modelling Helium Accumulation in Single Crystal Tungsten Specimens Exposed to He Plasma Discharges in the WEST Reciprocating Collector Probe

B. D. Wirth¹, E. Bernard², S. Blondel¹, J. Canik³, G. Ciraolo², D. Curreli⁴, J. Drobny⁴, W. Garcia¹, J. P. Gunn², A. Hayes¹, X. Hu³, A. Lasa¹, J. D. Lore³, C. Parish³, J.-Y. Pascal², B. Pégourié², E. Tsitrone², E. Unterberg³, and T. R. Younkin³

¹University of Tennessee, Knoxville, TN 37996, USA

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴University of Illinois, Urbana-Champaign, IL 61820, USA

Corresponding Author: B. D. Wirth, bdwirth@utk.edu

Synopsis: via Indico server: [IAEA-CN-286-1010](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Formation of the Radial Electric Field Profile in WEST Tokamak

L. Vermare¹, M. Peret², G. Dif-Pradalier², P. Hennequin¹, J. P. Gunn³, X. Garbet⁴,
J.-F. Artaud², O. Gurcan¹, C. Bourdelle², F. Clairet⁴, N. Fedorczak², C. Honoré¹,
V. Grandgirard², J. Morales², Y. Sarazin², R. Varennes², and D. Vezinet²

The WEST (Tore Supra) Team

¹Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

Corresponding Author: L. Vermare, laure.vermare@lpp.polytechnique.fr

Synopsis: via Indico server: [IAEA-CN-286-1027](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Toroidal Field Coil Quench Caused by Runaway Electrons on the WEST Tokamak

C. Reux¹, E. Petit², A. Torre¹, S. Nicollet¹, A. Le Luyer¹, and F. Saint-Laurent³

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Centre de Physique des Particules de Marseille (CPPM), CNRS/IN2P3,
Aix-Marseille Université, F-13288 Marseille, France*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: C. Reux, cedric.reux@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1055

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Long Discharges in Steady State with D₂ and N₂ on the Actively Cooled Tungsten Upper Divertor in WEST

T. Loarer¹, T. Dittmar², E. Tsitrone³, S. Brezinsek⁴, R. Bisson⁵, C. Bourdelle¹, J. Bucalossi³, Y. Corre¹, L. Delpech¹, D. Douai¹, N. Fedorczak¹, J. Gaspar⁶, J. P. Gunn⁷, P. Moreau¹, R. Mitteau¹, C. Desgranges¹, A. Ekedahl¹, and V. Lamaison¹

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

²*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁵*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

⁶*Institut Universitaire des Systèmes Thermiques Industriels (IUSTI), CNRS, Aix-Marseille Université, Marseille, France*

⁷*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: T. Loarer, thierry.loarer@cea.fr

Presenting Author: T. Dittmar

Synopsis: via Indico server: IAEA-CN-286-1130

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigation of Plasma Wall Interactions Between Tungsten Plasma Facing Components and Helium Plasmas in the WEST Tokamak

E. Tsitrone¹, B. Pégourié², J. Gaspar³, J. P. Gunn⁴, E. Bernard¹, R. Bisson⁵, S. Brezinsek⁶, V. Bruno¹, Y. Corre², L. Delpech², G. De Temmerman⁷, M. Diez¹, T. Dittmar⁸, D. Douai², A. Ekedahl², N. Fedorczak², A. Gallo⁵, A. Hakola⁹, M. Le Bohec³, T. Loarer², F. Rigollet³, and T. Wauters¹⁰

The WEST (Tore Supra) Team

¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Institut Universitaire des Systèmes Thermiques Industriels (IUSTI), CNRS, Aix-Marseille Université, Marseille, France

⁴Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁵Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France

⁶Forschungszentrum Jülich GmbH, Jülich, Germany

⁷International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁸Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁹VTT Technical Research Centre of Finland Ltd., Espoo, Finland

¹⁰Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

Corresponding Author: E. Tsitrone, emmanuelle.tsitrone@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1159

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Divertor Power Loads and Scrape-Off Layer Width in the Large Aspect Ratio Full Tungsten Tokamak WEST

J. Gaspar¹, Y. Corre², C. Bourdelle², S. Brezinsek³, J. Bucalossi⁴, N. Chanet², R. Dejarnac⁵, N. Fedorczak², M. Firdaouss², J.-L. Gardarein¹, J. P. Gunn⁶, G. Laffont⁷, T. Loarer², C. Pocheau², and E. Tsitroné⁴

The WEST (Tore Supra) Team

¹*Institut Universitaire des Systèmes Thermiques Industriels (IUSTI), CNRS, Aix-Marseille Université, Marseille, France*

²*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

³*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁴*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁵*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

⁶*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁷*Commissariat à l'énergie atomique (CEA/LIST), 91120 Palaiseau, France*

Corresponding Author: J. Gaspar, jonathan.gaspar@univ-amu.fr

Synopsis: via Indico server: IAEA-CN-286-1224

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Developing High Performance RF Heating Scenarios on the WEST Tokamak

M. Goniche¹, J.-F. Artaud¹, V. Bobkov², C. Bourdelle¹, J. Bucalossi³, L. Colas¹, C. Desgranges¹, L. Delpech¹, R. Dumont³, A. Ekedahl¹, N. Fedorcak¹, J. Garcia¹, C. Guillemaut¹, J. P. Gunn⁴, J. Hillairet¹, J.-M. Bernard¹, P. Devynck¹, C. Gil¹, C. C. Klepper⁵, E. A. Lerche⁶, G. Lombard¹, P. Maget³, P. Manas³, D. Mazon⁴, O. Meyer¹, J. Morales¹, P. Moreau¹, R. Nouailletas¹, M. Peret¹, Y. Peysson³, X. Regal-Mezin¹, G. Urbanczyk⁷, L. Vermare⁸, D. Vezinet¹, and G. M. Wallace⁹

The WEST (Tore Supra) Team

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁵*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

⁶*LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium*

⁷*College of Physics and Optoelectronic Engineering (CIOEE),*

Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China

⁸*Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France*

⁹*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

Corresponding Author: M. Goniche, marc.goniche@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1283

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

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Helium Doped Plasmas on FTU

C. Mazzotta¹, G. Pucella¹, G. Apruzzese¹, L. Boncagni¹, L. Carraro², C. Castaldo¹, S. Ceccuzzi¹, S. Cesaroni³, C. Cianfarani¹, G. Claps¹, B. Coppi⁴, O. D'Arcangelo¹, C. Di Troia¹, B. Esposito¹, L. Gabellieri¹, E. Giovannozzi¹, M. Iafrati¹, G. Maddaluno¹, M. Marinucci¹, S. Palomba³, M. E. Puiatti², A. Romano¹, L. Senni¹, O. Tudisco¹, and V. K. Zotta⁵

¹ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

²Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

³Università di Tor Vergata, 00173 Rome, Italy

⁴Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁵Department of Astronautical, Electrical and Energy Engineering,
Sapienza-Università di Roma, 00185 Rome, Italy

Corresponding Author: C. Mazzotta, cristina.mazzotta@enea.it

Synopsis: via Indico server: IAEA-CN-286-0899

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

CVD Diamond Detectors for Fast VUV and SX-Ray Diagnostics on FTU

F. Bombarda¹, A. Grosso¹, A. Romano¹, A. Sibio¹, B. Tilia¹, C. Centioli¹, C. Verona²,
E. Milani², G. Apruzzese¹, G. Pucella¹, G. Rocchi¹, G. Verona-Rinati², L. Gabellieri¹,
M. Angelone¹, M. Marinelli², S. Cesaroni², S. Palomba², and V. Piergotti¹

¹ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

²Università di Tor Vergata, 00173 Rome, Italy

Corresponding Author: F. Bombarda, francesca.bombarda@enea.it

Synopsis: via Indico server: IAEA-CN-286-0901

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Behavior of Heavy Metal Ions in FTU Plasmas

A. Romano¹, B. Zaniol², F. Bombarda¹, L. Carraro², L. Gabellieri¹, M. Valisa², A. Moro³,
B. Raspante¹, C. Meineri¹, C. Castaldo⁴, C. Cianfarani¹, C. Di Troia¹, F. Cordella¹,
F. Napoli¹, G. Apruzzese¹, G. Ramogida¹, G. Granucci³, M. E. Puiatti², M. Aquilini¹,
M. Marinucci¹, M. Baruzzo¹, M. Iafrati¹, M. Cappelli¹, N. Rispoli³, O. D'Arcangelo¹,
O. Tudisco¹, P. Buratti¹, P. Petrolini¹, S. Garavaglia³, S. Di Giovenale¹, S. Ceccuzzi¹,
V. Mellerá³, and W. Bin³

¹ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

²Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

³Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

⁴Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

Corresponding Author: A. Romano, afra.romano@enea.it

Presenting Author: L. Carraro

Synopsis: via Indico server: IAEA-CN-286-0981

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Latest Results on Quiescent and Postdisruption Runaway Electrons Mitigation Experiments at Frascati Tokamak Upgrade

D. Carnevale¹, M. Baruzzo², W. Bin³, F. Bombarda², L. Boncagni², O. Tudisco², B. Tilia², M. Sassano¹, A. Sibio², A. Romano², G. Ramogida², M. Passeri¹, V. Piergotti², G. Pucella², L. Panaccione², E. Nardon⁴, F. Napoli², C. Mazzotta², F. Martinelli¹, S. Magagnino⁵, D. Liuzza², M. Lehnen⁶, P. Buratti², M. Iafrati², A. Grosso², G. Granucci⁷, S. Galeani¹, S. Garavaglia⁷, L. Gabellieri², B. Esposito², O. D'Arcangelo², F. Cordella², C. Cianfarani⁵, C. Centioli², C. Castaldo⁵, M. Cappelli², L. Calacci¹, and S. Ceccuzzi²

¹Università di Tor Vergata, 00173 Rome, Italy

²ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

³Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

⁴Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁵Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁷Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

Corresponding Author: D. Carnevale, carnevaledaniele@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1042

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Divertor Tokamak Test Facility: Science Basis and Status of the Project

P. Martin¹

The DTT Contributors

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: P. Martin, martin@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1053

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Realization of Divertor Configuration Discharge in J-TEXT Tokamak

Z. Chen¹, L. Zhu¹, X. Xu¹, W. Zheng¹, M. Zhang¹, L. Gao¹, M. Xia¹, J. Yang¹, M. Zhu¹,
Z. Hao¹, Z. Cheng¹, X. Zhang¹, G. Zhuang², K. Gentle³, and Y. Liang^{4,5,6}

The J-TEXT Team

¹Huazhong University of Science and Technology, Hubei, People's Republic of China

²University of Science and Technology of China, Hefei, Anhui, People's Republic of China

³Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA

⁴International Joint Research Laboratory of Magnetic Confinement Fusion and Plasma Physics (IFPP),
Huazhong University of Science and Technology, Hubei, People's Republic of China

⁵Forschungszentrum Jülich GmbH, Jülich, Germany

⁶Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

Corresponding Author: Z. Chen, zpchen@hust.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1199

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Mitigation by Shattered Pellet Injection on J-TEXT

Z. Chen¹

¹*Huazhong University of Science and Technology, Hubei, People's Republic of China*

Corresponding Author: Z. Chen, 316417065@qq.com

Synopsis: via Indico server: IAEA-CN-286-1202

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

First Ohmic Experiments on KTM Tokamak

A. Sadykov¹, B. Chektybayev¹, I. Tazhibayeva¹, E. Batyrbekov¹, M. Skakov¹, and
D. Zarva¹

¹*Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan*

Corresponding Author: A. Sadykov, sadykov_a@nnc.kz

Synopsis: via Indico server: IAEA-CN-286-1041

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Test Results of Active Thermography Method for Plasma-Wall Interaction Studies on the KTM Tokamak

B. Chektybayev¹, E. Batyrbekov¹, A. Sadykov¹, M. Skakov¹, and E. Kashikbayev¹

¹*Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan*

Corresponding Author: B. Chektybayev, chektybaev@nnc.kz

Synopsis: via Indico server: IAEA-CN-286-1045

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Development of JT-60SA Equilibrium Controller with an Improved Iso-Flux Method and Vertical Displacement Events Predictor

S. Inoue¹, Y. Miyata¹, H. Urano¹, T. Suzuki¹, T. Wakatsuki¹, M. Yoshida¹, A. Matsuyama¹, N. Aiba¹, T. Bando¹, M. Takechi¹, and S. Ide¹

The JT-60SA Team

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

Corresponding Author: S. Inoue, inoue.shizuo@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0821

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Stabilization of Vertical Plasma Position in the PHIX Tokamak with Saddle Coils

S. Naito¹, M. Murayama¹, S. Hatakeyama², D. Kuwahara³, Y. Suzuki⁴, H. Tsutsui¹, and S. Tsuji-Iio¹

¹*Tokyo Institute of Technology, Tokyo, Japan*

²*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

³*Chubu University, Kasugai, Aichi, Japan*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: S. Naito, naito.shin@torus.nr.titech.ac.jp

Synopsis: via Indico server: [IAEA-CN-286-0795](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Comparison of Various Combinations of Emitters and Collectors of the Tokamak T-11M Lithium Circuit

S. Mirnov¹, V. Lazarev¹, V. Petrov¹, A. Prishvitsyn¹, Y. Vasina¹, A. Djurik¹, V. Otroshchenko¹, A. Shcherbak¹, I. Lyublinski², A. Vertkov², and M. Zharkov²

¹SSC RF "Troitsk Institute of Innovative and Thermonuclear Research" (TRINITI),
Moscow region, Russian Federation

²JSC "Red Star", Moscow, Russian Federation

Corresponding Author: S. Mirnov, sergeimirnov@yandex.ru

Synopsis: via Indico server: IAEA-CN-286-1127

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First Neutral Beam Experiments on Wendelstein 7-X

S. Lazerson¹, D. Hartmann¹, O. Ford¹, P. Poloskei¹, A. Spanier¹, L. Vanó¹, N. Rust¹, P. McNeely¹, S. Äkäslompolo², K. Ogawa³, M. Drevlak¹, C. Slaby¹, Y. Turkin¹, S. Bozhenkov¹, T. W. C. Neelis⁴, N. Harder¹, B. Heinemann¹, D. Holtum¹, W. Kraus¹, R. Nocentini¹, G. Orozco¹, R. Riedl¹, C. Hopf¹, J. Knauer¹, K. J. Brunner¹, M. Hirsch¹, P. Ekkehard¹, M. N. A. Beurskens¹, H. Damm¹, G. Fuchert¹, P. Nelde⁵, E. Scott¹, N. Pablant⁶, A. Langenberg¹, K. Ewert¹, P. Traverso⁷, P. Valson¹, U. Hergenahn¹, A. Pavone¹, K. Rahbarnia¹, T. Andreeva¹, J. Schilling¹, C. Brandt¹, U. Neuner¹, H. Thomsen¹, N. Chaudhary¹, U. Höfel¹, T. Stange¹, G. Weir¹, N. Marushchenko¹, M. Jakubowski¹, A. Ali¹, Y. Gao¹, H. Niemann¹, A. Puig Sitjes¹, R. König¹, and R. C. Wolf¹

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Aalto University, Espoo, Finland

³National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁴Eindhoven University of Technology, Eindhoven, The Netherlands

⁵Technische Universität Berlin, Berlin, Germany

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁷Auburn University, Auburn, AL 36849, USA

Corresponding Author: S. Lazerson, samuel.lazerson@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0736

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impurity Transport in Ion- and Electron-Root Plasmas of Wendelstein 7-X

A. Langenberg¹, N. Pablant², O. Marchuk³, P. Traverso⁴, G. Fuchert¹, S. Bozhenkov¹, H. Damm¹, E. Pasch¹, K. J. Brunner¹, J. Knauer¹, M. N. A. Beurskens¹, R. Burhenn¹, and R. C. Wolf¹

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁴Auburn University, Auburn, AL 36849, USA

Corresponding Author: A. Langenberg, andreas.langenberg@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0794

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Theory-Based Models for the Control of W7-X Divertor Plasmas

A. Dinklage¹, G. Fuchert¹, R. C. Wolf¹, A. Alonso², T. Andreeva¹, C. D. Beidler¹, M. R. de Baar³, Y. Gao¹, J. Geiger⁴, M. Jakubowski¹, H. Laqua¹, N. Marushchenko¹, U. Neuner¹, N. Pablant⁵, A. Pavone¹, K. Rahbarnia¹, J. Schmitt⁵, H. Smith¹, T. Stange¹, and Y. Turkin¹

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁵Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: A. Dinklage, dinklage@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0799

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Confinement and Equilibrium with Internal Islands in a Configuration Scan with Respect to IOTA in W7-X

J. Geiger¹, T. Andreeva¹, A. Dinklage², M. Hirsch², Y. Suzuki³, G. Wurden⁴, A. Alonso⁵, C. D. Beidler¹, M. N. A. Beurskens², S. Bozhenkov¹, R. Brakel², C. Brandt², K. J. Brunner¹, R. Burhenn², V. Bykov¹, G. Fuchert¹, M. Grahl², O. Grulke¹, U. Höfel², M. Jakubowski², T. Klinger², J. Knauer¹, G. Kocsis⁶, A. Krämer-Flecken⁷, A. Langenberg¹, S. Lazerson², U. Neuner², C. Nührenberg¹, N. Pablant⁸, K. Rahbarnia², J. Schilling², J. C. Schmitt⁹, H. Thomsen², E. Trier², M. Vécsei⁶, T. Windisch¹, J. Zhu¹, and S. Zoletnik⁶

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁴Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

⁵Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁶Centre for Energy Research (EK), Hungarian Academy of Sciences, Budapest, Hungary

⁷Forschungszentrum Jülich GmbH, Jülich, Germany

⁸Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁹Auburn University, Auburn, AL 36849, USA

Corresponding Author: J. Geiger, joachim.geiger@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0803

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulent Transport in the Scrape-Off Layer of Wendelstein 7-X

C. Killer¹, B. Shanahan¹, and O. Grulke¹

¹*Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany*

Corresponding Author: C. Killer, carsten.killer@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0905

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Leveraging 3D Magnetic Topologies in Support of Long-Pulse High Performance Plasma Operation

Y. Liang¹, A. Knieps¹, Y. Suzuki², S. Xu¹, P. Drews³, Y. Gao⁴, S. Liu⁵, Z. Huang¹, S. Zhou¹, M. Henkel¹, E. Wang¹, S. Sereda¹, Y. Li¹, X. Han¹, H. Xiang¹, A. Krämer-Flecken¹, J. Geiger⁶, Y. Feng⁶, R. König⁴, M. Jakubowski⁴, C. Killer⁶, T. Kobayashi², S. Masuzaki², D. Nicolai¹, G. Satheeswaran¹, O. Neubauer¹, and C. Linsmeier¹

¹Forschungszentrum Jülich GmbH, Jülich, Germany

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

³Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁵Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁶Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

Corresponding Author: Y. Liang, y.liang@fz-juelich.de

Synopsis: via Indico server: IAEA-CN-286-0936

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma-Surface Interaction in the Stellarator W7-X: Conclusion Drawn from Operation with Graphite Plasma-Facing Components

D. Naujoks¹, M. Jakubowski², M. Mayer², O. Schmitz³, S. Brezinsek⁴, S. Masuzaki⁵, A. Gorjaev⁶, A. Hakola⁷, B. Buttenschön², C. Dhard², D. Zhao⁸, E. Fortuna-Zalesna⁹, E. Wang⁸, F. Effenberg¹⁰, G. Motojima⁵, J. Oelmann⁸, J. Romazanov⁸, K. Schmid², M. Krychowiak², M. Rasinski⁸, M. Rubel¹¹, M. Balden², O. Neubauer⁸, O. Ford², P. Petterson¹¹, P. Drews⁸, R. Yi⁸, R. Brakel², R. Neu^{12,2}, S. Sereda^{2,8}, T. Kremeyer³, T. S. Pedersen², T. Dittmar⁸, T. Wauters⁶, V. Winters^{2,8}, and Y. Gao⁸

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴Forschungszentrum Jülich GmbH, Jülich, Germany

⁵National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁶Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

⁷VTT Technical Research Centre of Finland Ltd., Espoo, Finland

⁸Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁹Warsaw University of Technology, 00-661 Warsaw, Poland

¹⁰Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

¹¹KTH Royal Institute of Technology, Stockholm, Sweden

¹²Technische Universität München, Garching, Germany

Corresponding Author: D. Naujoks, dirk.naujoks@ipp.mpg.de

Presenting Author: S. Brezinsek

Synopsis: via Indico server: IAEA-CN-286-0940

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Radial Electric Field and Density Fluctuations Measured by Doppler Reflectometry During the Post-Pellet Enhanced Confinement Phase in W7-X

T. Estrada¹, D. Carralero¹, T. Windisch², A. Alonso³, J. M. García-Regaña³, E. Sánchez³, and J. L. Velasco³

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

²*Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany*

³*Laboratorio Nacional de Fusión (LNF),*

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

Corresponding Author: T. Estrada, teresa.estrada@ciemat.es

Synopsis: via Indico server: [IAEA-CN-286-0964](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Radiation Behavior Approaching High-Radiation Scenarios in W7-X

D. Zhang¹, R. Burhenn¹, Y. Feng¹, L. Giannone², R. König¹, F. Effenberg³, S. Kwak¹, J. Svensson¹, B. Buttenschön¹, M. N. A. Beurskens¹, F. Reimold¹, P. Hacker¹, F. Penzel², H. Thomsen¹, J. Baldzuhn¹, C. D. Beidler¹, S. Bozhenkov¹, K. J. Brunner¹, G. Fuchert¹, Y. Gao¹, M. Jakubowski¹, M. Krychowiak¹, H. Niemann¹, M. Otte¹, K. Rahbarnia¹, R. Lukas¹, and G. Weir¹

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: D. Zhang, daihong.zhang@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0984

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Net Parallel Carbon Rotation in the Core of the Wendelstein 7-X Stellarator: A Deviation from Neoclassical Predictions?

A. Alonso¹, O. Ford², L. Vanó², S. Äkäslompolo³, D. Carralero⁴, I. Calvo¹, A. Dinklage², T. Estrada⁴, A. Langenberg³, S. Lazerson², R. M. McDermott², N. Pablant⁵, P. Poloskei², H. Smith², J. L. Velasco¹, and T. Windisch³

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁴Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁵Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: A. Alonso, arturo.alonso@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-1071

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Direct 2D Measurements of Parallel Counter-Streaming Flows in the W7-X Scrape-Off Layer for Attached and Detached Plasmas

V. Perseo¹, D. Gradic¹, R. König¹, F. Reimold¹, V. Winters^{1,2}, H. Niemann¹, O. Ford¹, F. Effenberg³, D. Ennis⁴, M. Jakubowski¹, M. Krychowiak¹, P. Drewelow¹, Y. Gao¹, A. Puig Sitjes¹, F. Pisano⁵, and T. S. Pedersen¹

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Auburn University, Auburn, AL 36849, USA

⁵Università di Cagliari, 09124 Cagliari CA, Italy

Corresponding Author: V. Perseo, valeria.perseo@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1082

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High-Performance ECRH at W7-X: Experience and Perspectives

H. Laqua¹, J. Baldzuhn², H. Braune², S. Bozhenkov¹, K. J. Brunner¹, M. Hirsch², U. Höfel², J. Knauer¹, A. Langenberg¹, S. Marsen¹, D. Moseev², N. Pablant³, E. Pasch², T. Stange², and R. C. Wolf²

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: H. Laqua, laqua@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1091

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Sawtooth Crash Dynamics During ECCD Operations at W7-X

M. Zanini¹, H. Laqua¹, T. Stange², H. Thomsen², C. Brandt², H. Braune², K. J. Brunner¹,
M. Hirsch², U. Höfel², J. Knauer¹, S. Marsen¹, N. Marushchenko², K. Rahbarnia²,
J. Schilling², Y. Turkin², R. C. Wolf², and A. Zocco¹

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: M. Zanini, marco.zanini@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1136

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Indications of High-Recycling and the Role of Pressure and Power Dissipation for Detachment at W7-X

F. Reimold¹, F. Effenberg², R. König¹, M. Krychowiak¹, O. Schmitz³, Y. Feng⁴, M. Jakubowski¹, S. Brezinsek⁵, H. Niemann¹, G. Schlisio¹, M. Otte¹, D. Zhang⁴, T. Kremeyer³, E. Flom³, T. Barbui², and V. Winters^{1,6}

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁵Forschungszentrum Jülich GmbH, Jülich, Germany

⁶Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

Corresponding Author: F. Reimold, felix.reimold@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1296

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Energy Confinement in W7-X, More than just a Scaling Law

G. Fuchert¹, M. N. A. Beurskens², K. J. Brunner¹, S. Bozhenkov¹, A. Dinklage², P. Hacker², M. Hirsch², J. Knauer¹, E. Pasch², K. Rahbarnia², E. Scott³, D. Zhang¹, F. Warmer², and R. C. Wolf²

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³University of Wisconsin-Madison, Madison, WI 53706, USA

Corresponding Author: G. Fuchert, golo.fuchert@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1334

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

2D Distributions of Potential and Density Mean-Values and Oscillations in the ECRH and NBI Plasmas at the TJ-II Stellarator

L. Eliseev¹, A. Melnikov¹, M. Drabinskiy¹, P. Khabanov¹, N. Kharchev¹, C. Hidalgo², A. Kozachek³, D. López-Bruna², A. Chmyga³, M. Barcala², Á. Cappa², S. Lysenko¹, A. Molinero², J. L. de Pablos², U. Losada², F. Medina², I. Pastor², and M. Liniers²

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

Corresponding Author: L. Eliseev, eliseev_lg@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-0680

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

NBI-Driven Shear Alfvén Waves in the Presence of ECR Heating and EC Driven Current in the TJ-II Stellarator

Á. Cappa¹, E. Ascasibar², M. Liniers¹, D. López-Bruna¹, J. M. García-Regaña¹,
J. L. Velasco¹, J. Varela³, S. Mulas², M. A. Ochando², F. Medina¹, and J. M. Fontdecaba⁴

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: Á. Cappa, alvaro.cappa@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-0962

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Isotope Effect, Operational Limits and Zonal Flows in the TJ-II Stellarator

U. Losada¹, B. Liu², D. Fernández Ruiz¹, T. Kobayashi³, S. Ohshima⁴, B. van Milligen¹,
Á. Cappa¹, M. Liniers¹, B. López-Miranda¹, G. Guedes Grenfell⁵, C. Silva⁶, and
C. Hidalgo¹

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²ENN Science and Technology Development Co., Ltd, 065001, Langfang, Hebei, People's Republic of China

³National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁴Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁵Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁶Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

Corresponding Author: U. Losada, ulises.losada@ciemat.es

Presenting Author: C. Hidalgo

Synopsis: via Indico server: IAEA-CN-286-1031

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Physics Studies of Cryogenic Pellet and Tracer-Loaded Pellet (TESPEL) Injections in the Stellarator TJ-II

K. J. McCarthy¹, N. Panadero², N. Tamura³, G. Motojima³, G. Kocsis⁴, E. de la Cal¹, Á. Cappa², L. Eliseev⁵, T. Estrada¹, J. M. Fontdecaba⁴, J. Hernández Sánchez¹, M. Liniers², A. Melnikov⁵, and I. Pastor²

The TJ-II Team

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

²*Laboratorio Nacional de Fusión (LNF),*

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁵*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: K. J. McCarthy, kieran.mccarthy@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-1138

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Characterization and Sparse Modelling of Radiation Collapse and Density Limit in LHD

T. Yokoyama¹, H. Yamada¹, S. Masuzaki², J. Miyazawa², K. Mukai², B. Peterson²,
N. Tamura², R. Sakamoto², G. Motojima², K. Ida², M. Goto², and T. Oishi²

The LHD Experiment Group

¹Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: T. Yokoyama, yokoyama.tatsuya17@ae.k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0712

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of Partially Installed Tungsten Coated Divertor Tiles on the LHD Plasma and Plasma-Wall Interactions

G. Motojima¹, S. Masuzaki¹, M. Kobayashi¹, T. Oishi¹, G. Kawamura¹, M. Shoji¹,
Y. Hamaji¹, M. Kobayashi¹, M. Tokitani¹, T. Morisaki¹, and Y. Takeiri¹

The LHD Experiment Group

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: G. Motojima, motojima.gen@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0715

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Investigation of Isotope Effect on Energy Confinement Time and Thermal Transport in L-Mode Plasmas on LHD

H. Yamada¹, T. Kobayashi², K. Tanaka², T. Tokuzawa², K. Ida², R. Seki², C. Suzuki², K. Fujii³, M. Goto², H. Igami², K. Itoh², S. Murakami⁴, M. Osakabe², H. Tsuchiya², T. Tsujimura², and M. Yoshinuma²

¹University of Tokyo, Tokyo, Japan

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

³Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁴Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

Corresponding Author: H. Yamada, yamada.hiroshi@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0718

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Distribution of the Remaining Tritium in the LHD Vacuum Vessel

S. Masuzaki¹, M. Yajima¹, M. Tokitani¹, K. Ogawa¹, M. Tanaka¹, G. Motojima¹, M. Isobe¹, N. Yoshida², T. Otsuka³, Y. Oya⁴, Y. Hatano⁵, Y. Torikai⁶, N. Ashikawa¹, and Y. Nobuta⁷

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Kyushu University, Kasuga, Japan

³Kindai University, Higashiosaka, Osaka, Japan

⁴Shizuoka University, Shizuoka, Japan

⁵Hydrogen Isotope Research Center, University of Toyama, Toyama, Japan

⁶Ibaraki University, Mito, Ibaraki, Japan

⁷Hokkaido University, Sapporo, Hokkaido, Japan

Corresponding Author: S. Masuzaki, masuzaki.suguru@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0721

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

RMP Effect on Slowing Down of Locked-Mode-Like Instabilities in Helical Plasmas

Y. Takemura¹, K. Watanabe¹, S. Sakakibara¹, Y. Narushima¹, S. Ohdachi¹, K. Ida¹, and M. Yoshinuma¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: Y. Takemura, takemura.yuki@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0733

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Observation of Nuclear Elastic Scattering Effect by Energetic Protons on Deuteron Slowing-Down Behavior in the Large Helical Device

H. Matsuura¹, S. Sugiyama¹, K. Kimura¹, T. Urakawa¹, T. Nishitani², K. Ogawa²,
Y. Kawamoto², N. Tamura², M. Isobe², and M. Osakabe²

¹*Kyushu University, Kasuga, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: H. Matsuura, mat@nucl.kyushu-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0739

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Assessment of W Density in LHD Core Plasmas using Visible Forbidden Lines of Highly Charged W Ions

D. Kato¹, H. Sakaue¹, I. Murakami¹, M. Goto¹, T. Oishi¹, N. Tamura¹, H. Funaba¹, and S. Morita¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: D. Kato, kato.daiji@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0755

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Steady-State Sustainment of Divertor Detachment with Multispecies Impurity Seeding in LHD

K. Mukai¹, S. Masuzaki¹, Y. Hayashi¹, T. Oishi¹, C. Suzuki¹, M. Kobayashi¹, T. Tokuzawa¹,
H. Tanaka², and B. Peterson¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Graduate School of Engineering, Nagoya University, Nagoya, Japan

Corresponding Author: K. Mukai, mukai.kiyofumi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0757

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Suppression of the Energetic Particle Driven Interchange Mode in the Large Helical Device

S. Ohdachi¹, J. Varela¹, K. Watanabe¹, H. Nakano¹, H. Takahashi¹, Y. Suzuki¹,
Y. Narushima¹, T. Bando², X. Du³, and T. Morisaki¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Department of Fusion Science, Graduate University for Advanced Studies (SOKENDAI), Toki, Gifu, Japan*

³*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: S. Ohdachi, ohdachi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0800

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Isotope Effects in Internal Transport Barrier Strength on Large Helical Device

T. Kobayashi¹, H. Takahashi¹, K.-I. Nagaoka¹, M. Sasaki², M. Nakata¹, M. Yokoyama¹,
R. Seki¹, M. Yoshinuma¹, and K. Ida¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan*

Corresponding Author: T. Kobayashi, kobayashi.tatsuya@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0832

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improved Performance of ECRH by Real-Time Deposition Location Control and Perpendicular Injection in LHD

T. Tsujimura¹, R. Yanai¹, K. Tanaka¹, Y. Yoshimura¹, T. Tokuzawa¹, M. Nishiura¹,
R. Sakamoto¹, G. Motojima¹, S. Kubo¹, T. Shimozuma¹, H. Igami¹, H. Takahashi¹,
M. Yoshinuma¹, and S. Ohshima²

The LHD Experiment Group

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

Corresponding Author: T. Tsujimura, tsujimura.tohru@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0835

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Magnetic Configuration Effects on Turbulence Driven Transport from LHD and W7-X Identical Experiments

K. Tanaka¹, F. Warmer², M. Nunami¹, Y. Ohtani³, M. Nakata¹, T. Tsujimura¹, M. Yoshinuma¹, H. Takahashi¹, R. Yanai¹, T. Shimozuma¹, M. Yokoyama¹, R. Seki¹, S. Satake¹, H. Sugama¹, T. Tokuzawa¹, R. Yasuhara¹, Y. Takemura¹, H. Funaba¹, I. Yamada¹, K. Ida¹, B. Peterson¹, Y. Suzuki¹, S. Kubo¹, C. Suzuki¹, M. Osakabe¹, T. Morisaki¹, H. Yamada⁴, P. Xanthopoulos⁵, P. Helander², C. D. Beidler², T. Stange², H. Smith², Y. Turkin², K. J. Brunner², A. von Stechow², J. Geiger⁵, N. Pablant⁶, A. Langenberg⁵, E. Pasch², G. Fuchert⁵, S. Bozhenkov⁵, E. Scott², R. C. Wolf², G. Plunk⁵, and D. Zhang⁵

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁴University of Tokyo, Tokyo, Japan

⁵Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: K. Tanaka, ktanaka@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0840

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Demonstration of Real-Time Wall Conditioning and Plasma Control Through Impurity Powder Injection in LHD

F. Nespoli¹, N. Ashikawa², E. Gilson¹, R. Lunsford¹, S. Masuzaki², M. Shoji², T. Oishi²,
C. Suzuki², A. Nagy¹, D. Gates¹, and T. Morisaki²

The LHD Experiment Group

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: F. Nespoli, fnespoli@pppl.gov

Synopsis: via Indico server: [IAEA-CN-286-0855](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effect of Magnetic Configuration on Energy Confinement and Energetic-Particle-Driven MHD Modes in Heliotron J

K. Nagasaki¹, S. Ohshima², T. Minami¹, M. Miyoshi³, S. Yamamoto⁴, H. Okada¹, S. Kado¹, S. Kobayashi¹, S. Konoshima¹, T. Mizuuchi¹, Y. Kishimoto², Y. Nakamura³, A. Ishizawa², P. Adulsiriswad³, D. Qiu³, M. Luo³, Á. Cappa⁵, K. Wang⁶, and N. Smith⁷

¹*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

³*Graduate School of Energy Science, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

⁴*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

⁵*Laboratorio Nacional de Fusión (LNF),*

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁶*Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China*

⁷*Eindhoven University of Technology, Eindhoven, The Netherlands*

Corresponding Author: K. Nagasaki, nagasaki@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0740

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Turbulent Properties against Hydrogen Isotope Ratio and Zonal Flow Activities in Heliotron J

S. Ohshima¹, H. Okada², S. Kobayashi², T. Minami², S. Kado², P. Adulsiriswad¹, D. Qiu³, M. Luo³, R. Matoike³, S. Yamamoto², Y. Nakamura³, S. Konoshima², T. Mizuuchi², and K. Nagasaki²

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

³*Graduate School of Energy Science, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: S. Ohshima, ohshima@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0790

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of NBI Plasma Start-Up Assisted by Seed-Plasma Generation using Nonresonant Microwave Heating in Heliotron J

S. Kobayashi¹, K. Nagasaki¹, K. Hada², T. Stange³, K. Tokuhara⁴, S. Ohshima⁴, H. Okada¹, T. Minami¹, S. Kado¹, H. Ohgaki¹, T. Kii¹, H. Zen¹, Y. Nakamura⁵, A. Ishizawa⁴, Y. Suzuki⁶, M. Osakabe⁶, T. Murase⁶, Y. Kishimoto⁴, S. Konoshima¹, and T. Mizuuchi¹

¹*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Furukawa Electric Co., Ltd., Japan*

³*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁴*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

⁵*Graduate School of Energy Science, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

⁶*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: S. Kobayashi, kobayashi@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0793

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

MHD Calculations, Microwave Heating Scenarios Simulations and Diagnostics Updates on SCR-1 Stellarator

V. Vargas¹, R. Solano-Piedra¹, A. Ramírez¹, M. Hernández-Cisneros¹, F. Coto-Vílchez¹, M. Rojas-Quesada¹, L. Araya-Solano¹, J. Perez-Hidalgo¹, F. Vilchez-Coto¹, A. Köhn², D. Jiménez³, L. Campos-Duarte³, E. Meneses³, F. Cerdas¹, M. González-Vega¹, and S. Arias¹

¹*Instituto Tecnológico de Costa Rica, Cartago, Costa Rica*

²*Institut für Grenzflächenverfahrenstechnik und Plasmatechnologie (IGVP), Univ. Stuttgart, Germany*

³*Advanced Computing Laboratory, Costa Rica National High Technology Center, CENAT, San José, Costa Rica*

Corresponding Author: V. Vargas, ivargas@tec.ac.cr

Synopsis: via Indico server: [IAEA-CN-286-1356](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Current Carrying Filaments in the L-Mode, H-Mode and ELMs in RFX-Mod Tokamak Operation

M. Spolaore¹, G. Grenfell¹

The RFX-Mod Team

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: M. Spolaore, monica.spolaore@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1032

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Ion Heating and Energy Balance During Magnetic Reconnection Events in the RFX-Mod Experiment

M. Gobbin¹, M. Agostini¹, L. Carraro¹, L. Marrelli¹, B. Momo¹, R. Piovan¹, M. E. Puiatti¹, G. Spizzo¹, and M. Zuin¹

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: M. Gobbin, marco.gobbin@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1052

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Dynamics and Confinement of Ultralow-Q Plasmas in the RFX-Mod Device

M. Zuin¹, M. Agostini¹, F. Auriemma¹, D. Bonfiglio¹, S. Cappello¹, L. Carraro¹, R. Cavazzana¹, P. Franz¹, L. Marrelli¹, E. Martines¹, M. E. Puiatti¹, R. Piovani¹, G. Spizzo¹, D. Terranova¹, P. Zanca¹, B. Zaniol¹, and L. Zanotto¹

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: M. Zuin, matteo.zuin@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1081

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status of the RFX-Mod2 Reversed Field Pinch Upgrade

L. Marrelli¹

The RFX-Mod2 Team

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: L. Marrelli, lionello.marrelli@igi.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1077

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Machine Learning Accelerated Models for Scenario Optimization on NSTX-U

M. Boyer¹, S. Kaye^{1,2}

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Princeton University, Princeton, NJ 08544, USA

Corresponding Author: M. Boyer, mboyer@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0814

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Emission in the Ion Cyclotron Range of Frequencies (ICE) on NSTX(-U)

E. D. Fredrickson¹, A. Diallo¹, B. P. Leblanc¹, M. Podestà¹, N. Gorelenkov^{1,2}, and R. E. Bell¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Princeton University, Princeton, NJ 08544, USA

Corresponding Author: E. D. Fredrickson, efredrickson@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0913

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Fast Ions Redistribution and Losses due to Energetic Particle Modes in MAST

M. Cecconello¹, M. Fitzgerald², S. Henderson³, L. Kogan², C. Michael⁴, J. Buchanan³,
K. McClements², L. Garzotti^{3,2}, A. Sperduti¹, and A. Jacobsen³

¹*Uppsala University, Uppsala, Sweden*

²*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

³*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁴*University of California Los Angeles, CA 90095, USA*

Corresponding Author: M. Cecconello, marco.cecconello@physics.uu.se

Synopsis: via Indico server: IAEA-CN-286-1212

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Exploration of the Equilibrium and Stability Properties of Spherical Tokamaks and Projection for MAST-U

J. Berkery¹, S. Sabbagh¹, A. Piccione², G. Xia³, Y. Andreopoulos², J. Bialek¹, Z. Wang⁴,
C. Ham³, A. Thornton³, and Y. Liu⁵

¹*Columbia University, New York, NY 10027, USA*

²*Imperial College, London, UK*

³*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: J. Berkery, jwb2112@columbia.edu

Synopsis: via Indico server: IAEA-CN-286-0645

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Experimental Results on Current Drive by Lower Hybrid Fast Wave in VEST

S.-H. Kim¹, J.-G. Jo¹, J.-I. Wang², and Y.-S. Hwang²

¹*Korea Atomic Energy Research Institute (KAERI), Daejeon, Republic of Korea*

²*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: S.-H. Kim, shkim95@kaeri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1254

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

First Neutral Beam Heating Experiments in Versatile Experiment Spherical Torus

K. Lee¹, Y.-S. Hwang¹, S. Lee¹, S. Kim¹, C. Lee¹, J. J. Jang¹, J. Kim¹, W. Jeong¹, and B. Jeong²

¹*Seoul National University, Seoul, Republic of Korea*

²*Korea Atomic Energy Research Institute (KAERI), Daejeon, Republic of Korea*

Corresponding Author: K. Lee, apfndwyel@snu.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1259

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Internal Reconnection Events in Versatile Experiment Spherical Torus

Y.-S. Hwang¹, S. Kim¹, J. J. Jang¹, and Y. Kim¹

¹*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: Y.-S. Hwang, yhwang@snu.ac.kr

Presenting Author: S. Kim

Synopsis: via Indico server: IAEA-CN-286-1311

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Energy Confinement in a Spherical Tokamak Globus-M2 with a Toroidal Magnetic Field Approaching 0.8 T

G. Kurskiev¹, V. Gusev¹, N. Sakharov¹, N. Bakharev¹, V. Bulanin², F. Chernyshev¹, A. A. Kavin³, N. Khromov¹, E. Kiselev¹, S. Krikunov¹, V. Minaev¹, I. Miroshnikov¹, A. Novokhatsky¹, N. Zhiltsov¹, E. Mukhin¹, M. Patrov¹, Y. Petrov¹, K. Shulyatiev¹, P. Shchegolev¹, A. Telnova¹, E. Tukhmeneva¹, V. Tokarev¹, S. Tolstyakov¹, A. Yashin⁴, and E. Zhilin⁵

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

²*St. Petersburg State Polytechnical University, St. Petersburg, Russian Federation*

³*D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation*

⁴*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

⁵*Ioffe Fusion Technology Ltd., St. Petersburg, Russian Federation*

Corresponding Author: G. Kurskiev, gleb.kurskiev@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0659

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First Observations of the Transition to the H-Mode on the Globus-M2 Tokamak using Doppler Backscattering

A. Yashin¹, V. Bulanin², V. Gusev³, G. Kurskiev³, V. Minaev³, M. Patrov³, A. Petrov¹, and Y. Petrov³

¹*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

²*St. Petersburg State Polytechnical University, St. Petersburg, Russian Federation*

³*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

Corresponding Author: A. Yashin, alex_yashin@list.ru

Synopsis: via Indico server: IAEA-CN-286-1288

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Control of Fuel Particle Balance with the Wall Temperature Modification and Particle Compression in the Hot Wall on All-Metal Plasma Facing Wall in QUEST

K. Hanada¹, M. Hasegawa², N. Yoshida², H. Idei², R. Ikezoe², T. Onchi², K. Kuroda², M. Oya², S. Kojima², Q. Yue², Y. Oya³, T. Shikama⁴, A. Kuzmin⁴, N. Yoneda⁴, S. Mori⁴, I. Takagi⁴, M. Miyamoto⁵, A. Hatayama⁶, K. Hoshino⁶, T. Ido², Y. Nagashima², K. Nakamura², H. Watanabe², K. Tokunaga², S. Kawasaki², K. Kono², A. Higashijima², T. Nagata², S. Shimabukuro², Y. Takase⁷, S. Murakami⁴, X. Gao⁸, H. Liu⁸, J. Qian⁸, R. Raman⁹, and M. Ono¹⁰

¹Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan

²Kyushu University, Kasuga, Japan

³Shizuoka University, Shizuoka, Japan

⁴Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁵Shimane University, Matsue, Shimane, Japan

⁶Keio University, Tokyo, Japan

⁷University of Tokyo, Tokyo, Japan

⁸Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁹University of Washington, Seattle, WA 98195, USA

¹⁰Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: K. Hanada, hanada@triam.kyushu-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0767

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Current Ramp-Up with 28 Ghz Second Harmonic Electron Cyclotron Wave in the Quest Spherical Tokamak

T. Onchi¹, H. Idei¹, M. Fukuyama¹, D. Ogata¹, T. Kariya², A. Ejiri³, K. Matsuzaki⁴, Y. Osawa⁴, Y. Peng⁴, R. Ashida¹, S. Kojima⁵, K. Kuroda¹, M. Hasegawa¹, R. Ikezoe¹, T. Ido¹, K. Hanada⁶, A. Higashijima¹, T. Nagata¹, S. Shimabukuro¹, I. Niiya¹, K. Nakamura⁷, N. Bertelli⁸, M. Ono^{8,9}, Y. Takase⁴, A. Fukuyama¹⁰, and S. Murakami¹¹

¹*Kyushu University, Kasuga, Japan*

²*Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan*

³*Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan*

⁴*University of Tokyo, Tokyo, Japan*

⁵*Kyushu University, Fukuoka, Fukuoka Prefecture, Japan*

⁶*Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan*

⁷*Interdisciplinary Graduate School of Engineering Sciences (IGSES), Kyushu University, Kasuga, Japan*

⁸*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁹*Princeton University, Princeton, NJ 08544, USA*

¹⁰*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

¹¹*Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: T. Onchi, onchi@tri.am.kyushu-u.ac.jp

Synopsis: via Indico server: [IAEA-CN-286-0844](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Modification of the Magneto-Hydro-Dynamic Equilibrium by the Lower-Hybrid Wave Driven Fast Electrons on the TST-2 Spherical Tokamak

N. Tsujii¹, Y. Takase¹, A. Ejiri², O. Watanabe¹, H. Yamazaki¹, Y. Peng¹, K. Iwasaki¹, Y. Aoi¹, Y. Ko¹, K. Matsuzaki¹, J. Rice¹, Y. Osawa¹, C. Moeller³, and Y. Yoshimura⁴

¹University of Tokyo, Tokyo, Japan

²Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

³General Atomics, San Diego, CA 92186, USA

⁴National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: N. Tsujii, tsujii@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0730

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Energy, Momentum and Particle Balances of Electrons in Lower Hybrid Wave Sustained Plasmas on the TST-2 Spherical Tokamak

A. Ejiri¹, H. Yamazaki², Y. Takase², N. Tsujii², O. Watanabe², Y. Peng², K. Iwasaki², Y. Aoi², Y. Ko², K. Matsuzaki², J. Rice², Y. Osawa², C. Moeller³, Y. Yoshimura⁴, H. Kasahara⁴, K. Saito⁴, T. Seki⁴, and S. Kamio⁴

¹Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

²University of Tokyo, Tokyo, Japan

³General Atomics, San Diego, CA 92186, USA

⁴National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: A. Ejiri, ejiri@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0870

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Electron Beam Injection to Noninductively-Produced Spherical Tokamak Plasmas by Electron Bernstein Wave in LATE

H. Tanaka¹, T. Kuzuma¹, R. Ashida¹, R. Kajita¹, T. Nagaeki¹, T. Nakai¹, S. Matsui¹,
S. Yamagata¹, R. Nakai¹, X. Guo¹, Y. Nozawa¹, M. Uchida¹, and T. Maekawa¹

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: H. Tanaka, h-tanaka@energy.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0759

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Multiple Plasmoid Formation and Ejection in TS-3U and TS-4U Merging Tokamaks Experiments

M. Akimitsu¹, Y. Ono¹, Q. Cao¹, Y. Cai¹, K. Miki¹, H. Yamaguchi¹, S. Kamiya¹,
R. Someya¹, and H. Tanaka¹

¹*University of Tokyo, Tokyo, Japan*

Corresponding Author: M. Akimitsu, makimitsu@ts.t.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0769

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Global Ion Heating/Transport During Merging Spherical Tokamak Formation

H. Tanabe¹, Q. Cao¹, H. Tanaka¹, T. Ahmadi¹, A. Sawada¹, C.-Z. Cheng¹, and Y. Ono¹

¹*Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan*

Corresponding Author: H. Tanabe, tanabe@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0737

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Control of Electron Acceleration Process During Merging Start-Up of Spherical Tokamak

M. Inomoto¹, T. Mihara¹, K. Kondo¹, H. Kaneko¹, K. Kusano¹, S. Kamio², and E. Kawamori³

¹*University of Tokyo, Tokyo, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

³*National Cheng Kung University, Tainan, Taiwan, China*

Corresponding Author: M. Inomoto, inomoto@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0753

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Implementation of the Spherical Tokamak MEDUSA-CR

L. Araya-Solano¹

¹*Instituto Tecnológico de Costa Rica, Cartago, Costa Rica*

Corresponding Author: L. Araya-Solano, e7001a@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1340

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Divertor Heat Flux Broadening by Grassy ELMs

X. Xu¹, X. Wang², H. Wang³, N. Li⁴, Z. Li³, N. Yan⁵, G. Xu⁵, X. He⁴, G. Deng⁵, T. Xia⁵,
B. Zhu¹, V. S. Chan³, H. Guo³, J. Ren⁶, C. Lasnier¹, R. Nazikian⁷, and A. Ashourvan⁷

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Peking University, Haidian, Beijing, People's Republic of China

³General Atomics, San Diego, CA 92186, USA

⁴Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China

⁵Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁶University of Tennessee, Knoxville, TN 37996, USA

⁷Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: X. Xu, xu2@llnl.gov

Synopsis: via Indico server: IAEA-CN-286-1361

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Detached Plasma Profile in the Divertor Simulation Experimental Module of Gamma 10/PDX

M. Yoshikawa¹, J. Kohagura¹, N. Ezumi¹, T. Iijima¹, K. Nojiri¹, A. Terakado²,
Y. Nakashima¹, T. Kariya¹, T. Numakura¹, M. Hirata³, R. Minami¹, M. Sakamoto¹,
M. Ichimura¹, T. Imai¹, M. S. Islam⁴, Y. Shima¹, S. Suto¹, T. Mouri¹, T. Hara¹, R. Yasuhara⁴,
I. Yamada⁴, H. Funaba⁴, T. Minami⁵, N. Kenmochi⁶, D. Kuwahara⁷, and
H. J. van der Meiden⁸

¹Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan

²National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

³University of Tsukuba, Tsukuba, Ibaraki, Japan

⁴National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁵Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁶University of Tokyo, Tokyo, Japan

⁷Chubu University, Kasugai, Aichi, Japan

⁸Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

Corresponding Author: M. Yoshikawa, yosikawa@prc.tsukuba.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0691

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Detachment in Gamma 10/PDX Tandem Mirror: Role of Molecule Gases and Target Configuration

N. Ezumi¹, T. Sugiyama¹, H. Gamo¹, Y. Takami¹, T. Iijima¹, K. Nojiri¹, T. Hara¹, Y. Ando¹, A. Kondo¹, M. Hirata², J. Kohagura¹, M. Yoshikawa¹, Y. Nakashima¹, M. Sakamoto¹, R. Perillo³, H. Guo⁴, T. Kuwabara⁵, H. Tanaka⁶, N. Ohno⁶, K. Sawada⁷, A. Tonegawa⁸, and S. Masuzaki⁹

¹Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan

²University of Tsukuba, Tsukuba, Ibaraki, Japan

³University of California San Diego, CA 92093, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵Nagoya University, Nagoya, Japan

⁶Graduate School of Engineering, Nagoya University, Nagoya, Japan

⁷Shinshu University, Matsumoto, Nagano, Japan

⁸Tokai University, Tokyo, Japan

⁹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: N. Ezumi, ezumi@prc.tsukuba.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0833

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Ammonia Production on Tungsten and Stainless Steel During Nitrogen Seeded H(D) Plasmas in the Linear Plasma Device Gym

L. Laguardia¹, F. Ghezzi¹, G. Granucci², V. Mellerà², D. Minelli¹, M. Pedroni¹, D. Ricci³,
N. Rispoli¹, A. Uccello³, and L. Ferrero⁴

¹*Istituto di Fisica del Plasma CNR, EURATOM-ENEA-CNR Association, Milano, Italy*

²*Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy*

³*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

⁴*Università degli Studi di Milano-Bicocca, 20126 Milano, Italy*

Corresponding Author: L. Laguardia, laura.laguardia@istp.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1359

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Vapour Shielding of Liquid-Metal CPS Based Targets under ELM-Like and Disruption Transient Loading

I. Garkusha¹, V. Makhlai¹, Y. Petrov¹, S. Herashchenko¹, M. Ladygina¹, N. Aksenov¹,
O. Byrka¹, V. Staltsov¹, V. Chebotarev¹, and S. Pestchany²

¹National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

²Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Corresponding Author: I. Garkusha, garkusha@ipp.kharkov.ua

Synopsis: via Indico server: IAEA-CN-286-0619

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Physics of Negative Ions and Helicon Waves in a Resonant Antenna Plasma Source for Neutral Beams

I. Furno¹, A. Riccardo¹, S. Béchu², M. Fadone³, P. Guittienne^{1,4}, A. Howling¹, R. Jacquier¹, G. Plyushchev¹, C. Stollberg¹, M. Barbisan^{3,5}, R. Pasqualotto³, and A. Simonin⁶

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²Université Grenoble-Alpes, CNRS, Grenoble INP, LPSC-INP23, 38000 Grenoble, France

³Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁴Helyssen, Route de la Louche 31, 1092 Belmont-sur-Lausanne, Switzerland

⁵Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro (LNL), Legnaro, Italy

⁶Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: I. Furno, ivo.furno@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-0910

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

First Laboratory Observation on Controlled Mitigation of Energetic Electrons by Whistlers

A. K. Sanyasi¹, L. Awasthi¹, P. K. Srivastava¹, R. Sugandhi¹, and D. Sharma¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: A. K. Sanyasi, amulya@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1305

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Investigation of Plasmoid Reconnection and Ion Heating During Transient CHI Start-Up on HIST

M. Nagata¹, H. Miyamoto¹, Y. Ibaraki¹, and N. Fukumoto¹

¹*University of Hyogo, Kobe, Hyogo, Japan*

Corresponding Author: M. Nagata, nagata@eng.u-hyogo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0754

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Inward Diffusion Driven by Low Frequency Fluctuations in Self-Organizing Magnetospheric Plasma

N. Kenmochi¹, Y. Yokota¹, M. Nishiura², H. Saitoh¹, N. Sato³, K. Nakamura¹, T. Mori¹,
K. Ueda¹, and Z. Yoshida¹

¹Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

³Research Institute for Mathematical Sciences, Kyoto University, Nishikyō-ku, Kyoto 615-8540, Japan

Corresponding Author: N. Kenmochi, kenmochi@ppl.k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0714

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

TH: Magnetic Fusion Theory and Modelling

Global JINTRAC Simulations for ITER PFPO Scenario Development

E. Militello Asp¹, Y. Baranov², G. Corrigan¹, D. Farina³, L. Figini³, L. Garzotti^{2,1},
D. Harting⁴, F. Köchl¹, A. Loarte⁵, H. Nordman⁶, V. Parail¹, S. Pinches⁵, E. Tholerus¹,
A. Polevoi⁵, R. Sartori⁷, and P. Strand⁶

¹Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

²United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

³Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

⁴Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁵International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁶Chalmers University of Technology, Göteborg, Sweden

⁷F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

Corresponding Author: E. Militello Asp, elina.militello.asp@ukaea.uk

See also Poster TH/1-1: P2 Tuesday

Synopsis: via Indico server: IAEA–CN–286–1104

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of Resonant Magnetic Field Penetration in ELM Suppression and Density Pump-Out in DIII-D ITER-Like Plasmas

Q. Hu¹, R. Nazikian¹, Q. Yu², B. A. Grierson¹, N. Logan¹, J.-K. Park¹, and C. Paz-Soldan³

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³General Atomics, San Diego, CA 92186, USA

Corresponding Author: Q. Hu, qhu@pppl.gov

See also Poster TH/2-1: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0702

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Nonlinear Simulation Study of the Effect of Toroidal Rotation on RMP Control of ELMs

D. Chandra¹, A. Sen¹, and A. Thyagaraja²

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*University of Bristol, Bristol, BS8 1TH, UK*

Corresponding Author: D. Chandra, debasis@ipr.res.in

See also Poster TH/2-2: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-1119

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Simulations on the Control of ELM and Edge Turbulence by RF Waves in EAST H-Mode Discharges

T. Xia¹, Y. Li², B. Gui¹, J. Li¹, Y. Yu³, Y. Huang¹, X. Zhang¹, C. Zhou², and M. Ye²

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

³*Anqing Normal University, Anhui, People's Republic of China*

Corresponding Author: T. Xia, xiaty@ipp.ac.cn

See also Poster TH/2-3: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-1022

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

On Effect of $N=2$ RMP to Edge Pedestal in KSTAR with Nonlinear MHD Simulation

S. Kim¹, S. Pamela^{2,3}, O. Kwon⁴, M. Bécoulet⁵, G. T. A. Huijsmans⁶, Y. In⁷, J. Lee⁸,
M. Kim⁸, and Y.-S. Na¹

¹*Seoul National University, Seoul, Republic of Korea*

²*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

³*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁴*Daegu University, Gyeongbuk, Republic of Korea*

⁵*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁶*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁷*Ulsan National Institute of Science and Technology (UNIST), Ulsan, Republic of Korea*

⁸*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: S. Kim, ksk911211@snu.ac.kr

See also Poster TH/2-4: P6 Thursday

Synopsis: via Indico server: [IAEA-CN-286-1235](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Toroidal Modelling of Plasma Response to RMP Fields for HL-2M

G. Hao¹, H. Chen¹, Y. Liu², L. Zhou³, Q. Chen¹, Y. Miao⁴, Z. Wang¹, X. Ji¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

³*Dalian Maritime University, Liaoning, Dalian, 116026, People's Republic of China*

⁴*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

Corresponding Author: G. Hao, haogz@swip.ac.cn

See also Poster TH/2-5: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-1172

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Gyrokinetic Simulation in Realistic Divertor Geometry Reproduces Density Pump-Out and Enhanced Electron Heat Confinement in Tokamak Edge Plasma under Resonant Magnetic Perturbations

R. Hager¹, C. S. Chang^{2,3}, N. Ferraro¹, and R. Nazikian¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Princeton University, Princeton, NJ 08544, USA

³Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

Corresponding Author: R. Hager, rhager@pppl.gov

See also Poster TH/3-1: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0914

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulations of Turbulence, its Suppression and Profile Evolution across the Edge and Scrape-Off Layer of the ASDEX-Upgrade Tokamak

W. Zholobenko¹, T. Body¹, A. Stegmeir¹, M. Griener¹, B. Zhu², P. Manz¹, D. Coster¹, F. Jenko¹, E. Wolfrum¹, M. Francisquez³, and B. Rogers⁴

The ASDEX-Upgrade Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

³Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

⁴Department of Physics and Astronomy, Dartmouth College, Hanover, NH 03755, USA

Corresponding Author: W. Zholobenko, wladimir.zholobenko@ipp.mpg.de

See also Poster TH/3-2: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1086

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulations of Edge Localized Mode (ELM) Cycles and ELM Control

M. Hölzl¹, A. Cathey-Cevallos¹, S. Futatani², G. T. A. Huijsmans³, F. Orain¹, M. Dunne¹, S. Pamela^{4,5}, M. Bécoulet³, F. J. Artola⁶, D. van Vugt⁷, S. Smith⁴, N. Schwarz¹, F. Liu³, S. Korving⁷, M. Gruca⁸, S. Günter¹, K. Lackner¹, E. Wolfrum¹, E. Viezzer⁹, and P. Lang¹

The JOREK, ASDEX-Upgrade and EUROfusion MST1 Teams

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Universitat Politècnica de Catalunya (UPC), Barcelona, Spain

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁵United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁷Eindhoven University of Technology, Eindhoven, The Netherlands

⁸Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

⁹Universidad de Sevilla, Seville, Spain

Corresponding Author: M. Hölzl, mhoelzl@ipp.mpg.de

See also Poster TH/3-3: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0971

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First Nonlinear Full- f Electromagnetic Gyrokinetic Continuum Simulations of Turbulence in Tokamak Scrape-Off Layer and Pedestal

A. Hakim¹, N. Mandell¹, M. Francisquez², R. Mukherjee¹, and G. Hammett¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: A. Hakim, ahakim@pppl.gov

See also Poster TH/3-4: P6 Thursday

Synopsis: via Indico server: IAEA-CN-286-0983

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Multimachine SOLPS-ITER Comparison of Impurity Seeded H-Mode Radiative Divertor Regimes with Metal Walls

V. Rozhansky¹, E. Kaveeva¹, I. Senichenkov¹, I. Veselova¹, S. Voskoboynikov¹, R. A. Pitts², S. Wiesen³, C. Giroud⁴, D. Coster⁵, and X. Bonnin²

¹*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁴*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

⁵*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: V. Rozhansky, rozhansky@mail.ru

See also Poster TH/3-5: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1149

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulence Suppression due to Energetic Particles: From First Principles to Gyrokinetic Simulations and Experimental Observations

A. Di Siena¹, R. Bilato², T. Görler², A. Bañón Navarro², E. Poli², D. Jarema², E. Fable², C. Angioni², V. Bobkov², R. Ochoukov², P. A. Schneider², and F. Jenko²

The ASDEX-Upgrade Team

¹University of Texas at Austin, Austin, TX 78712, USA

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: A. Di Siena, alessandro.di.siena@ipp.mpg.de

See also Poster TH/4-1: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1103

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Interaction Between Energetic-Particle-Driven MHD Mode and Drift-Wave Turbulence Based on Global Gyrokinetic Simulation

A. Ishizawa¹, K. Imadera¹, Y. Nakamura², and Y. Kishimoto¹

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Graduate School of Energy Science, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: A. Ishizawa, ishizawa@energy.kyoto-u.ac.jp

See also Poster TH/4-2: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-0752

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of Magnetic Islands on Plasma Confinement and Self-Driven Current Generation

W. Wang¹, M.-G. Yoo¹, E. Startsev¹, S. Ethier¹, and J. Chen¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: W. Wang, wwang@pppl.gov

See also Poster TH/4-3: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-1325

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

How the Narrow Edge–Scrape-Off Layer Interface Self-Organizes Turbulence Globally

G. Dif-Pradalier¹, P. Ghendrih¹, E. Caschera¹, P. Donnel², X. Garbet³, C. Gillot¹, V. Grandgirard¹, Y. Sarazin¹, R. Varennes¹, L. Vermare⁴, Y. Camenen⁵, F. Widmer⁶, and D. Zarzoso⁵

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

²*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France*

⁵*Centre national de la recherche scientifique (CNRS), 75016 Paris, France*

⁶*Aix-Marseille Université, Marseille, France*

Corresponding Author: G. Dif-Pradalier, guilhem.dif-pradalier@cea.fr

See also Poster TH/4-4: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0888

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Spontaneous ITB Formation in Gyrokinetic Flux-Driven ITG/TEM Turbulence

K. Imadera¹, Y. Kishimoto¹

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: K. Imadera, imadera@energy.kyoto-u.ac.jp

See also Poster TH/4-5: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0758

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Strong Reversal of Simple Isotope Scaling Laws in Tokamak Edge Turbulence

E. A. Belli¹, J. Candy¹, and R. E. Waltz¹

¹General Atomics, San Diego, CA 92186, USA

Corresponding Author: E. A. Belli, bellie@fusion.gat.com

See also Poster TH/5-1: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0683

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Predict First: Flux-Driven Multichannel Integrated Modelling over Multiple Confinement Times with the Gyrokinetic Turbulent Transport Model QUALIKIZ

J. Citrin¹, C. Bourdelle², Y. Camenen³, F. J. Casson⁴, X. Garbet⁵, A. Ho⁶, F. Jenko⁷, F. Köchl⁸, P. Mantica⁹, M. Marin⁶, K. L. van de Plassche⁶, G. Snoep⁶, and C. Stephens¹⁰

The Jet Contributors

¹FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Centre national de la recherche scientifique (CNRS), 75016 Paris, France

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁶Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁷Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁸Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁹Istituto di Fisica del Plasma (IFP), Consiglio Nazionale delle Ricerche (CNR), 20125 Milan, Italy

¹⁰University of California Los Angeles, CA 90095, USA

Corresponding Author: J. Citrin, j.citrin@diffier.nl

See also Poster TH/5-2: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1293

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Improved Prediction Scheme for Turbulent Transport by Combining Machine Learning and First-Principle Simulation

M. Nunami¹, S. Toda¹, M. Nakata¹, and H. Sugama¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: M. Nunami, nunami.masanori@nifs.ac.jp

See also Poster TH/5-3: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0716

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Theory and Modelling Activities in Support of the ITER Disruption Mitigation System

E. Nardon¹, A. Matsuyama², M. Lehnen³, P. Aleynikov⁴, F. J. Artola³, V. K. Bandaru⁵,
D. Banerjee⁶, M. T. Beidler⁷, D. Bonfiglio⁸, A. Boozer⁹, B. Breizman¹⁰, D. Brennan¹¹,
D. Del-Castillo-Negrete⁷, N. Ferraro¹¹, O. Embreus¹², R. W. Harvey¹³, M. Hölzl⁵, D. Hu¹⁴,
G. T. A. Huijsmans³, V. A. Izzo¹⁵, S. C. Jardin¹¹, C. C. Kim^{16,17}, S. Kononov¹⁸, Y. Liu¹⁷,
B. Lyons¹⁷, J. R. Martin-Solis¹⁹, C. McDevitt²⁰, G. Papp⁵, P. Parks¹⁷, Y. Peysson¹,
S. Roman²¹, C. Sommariva²², D. Spong⁷, H. Strauss²³, and X. Tang²⁰

The Jet Contributors

¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

³International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁶University of Science and Technology of China, Hefei, Anhui, People's Republic of China

⁷Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁸Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁹Columbia University, New York, NY 10027, USA

¹⁰University of Texas at Austin, Austin, TX 78712, USA

¹¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

¹²Chalmers University of Technology, Göteborg, Sweden

¹³CompX, Del Mar, CA 92014, USA

¹⁴Beihang University (BUAA), Beijing, People's Republic of China

¹⁵University of California San Diego, CA 92093, USA

¹⁶SLS2 Consulting, San Diego, CA 92107, USA

¹⁷General Atomics, San Diego, CA 92186, USA

¹⁸National Research Centre "Kurchatov Institute", Moscow, Russian Federation

¹⁹Universidad Carlos III de Madrid, Madrid, Spain

²⁰Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

²¹Stony Brook University, Stony Brook, NY 11794, USA

²²Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²³HRS Fusion, West Orange, NJ 07052, USA

Corresponding Author: E. Nardon, eric.nardon@cea.fr

See also Poster TH/6-1: P3 Wednesday

Synopsis: via Indico server: [IAEA-CN-286-0965](https://indico.cern.ch/event/1000000/contributions/4500000/)

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

Implementation of Artificial Intelligence (AI)/Deep Learning Disruption Predictor into a Plasma Control System

W. Tang¹, J. Kates-Harbeck¹, A. Svyatkovskiy¹, E. Feibush¹, M. Boyer¹, K. Erickson¹,
G. Dong¹, K. Felker¹, R. Conlin¹, J. Abbatte¹, M. Clement¹, R. Nazikian¹, N. Logan¹,
C. Rea², Z. Lin³, J. Barr⁴, D. Eldon⁴, A. Moser⁴, and M. Maslov⁵

The Jet Contributors

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

³University of California Irvine, CA 92697, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵Culham Science Centre, Abingdon, UK

Corresponding Author: W. Tang, tang@pppl.gov

See also Poster TH/7-1Ra: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0862

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Machine Learning Approach for Data Visualization and Parameter Selection for Efficient Disruption Prediction in Tokamaks

I. Bandyopadhyay^{1,2}, Y. K. Meghrajani³, S. Patel³, J. Patel³, H. S. Mazumdar³, L. Desai³,
V. K. Panchal², R. L. Tanna², and J. Ghosh²

The ADITYA Team

Rapporteured by: **W. Tang**

¹International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India

²Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

³Dharmsinh Desai University, Nadiad, Gujarat, India

Corresponding Author: I. Bandyopadhyay, indranil@iter-india.org

See also Poster TH/7-1Rb: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1263

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

In-Depth Research on the Interpretable Disruption Predictor in HL-2A

Z. Yang¹, F. Xia¹, X. Song¹, Z. Gao², Y. Dong¹, Y. Huang¹, and S. Wang¹

*Rapporteur*ed by: **W. Tang**

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Tsinghua University, Haidian, Beijing, People's Republic of China

Corresponding Author: Z. Yang, zy-yang@swip.ac.cn

See also Poster TH/7-1Rc: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1120

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Towards Integrated RF Actuator Modelling: Whole Device Scale RF Full-Wave Simulation Including Hot Core and 3D SOL/Antenna Regions

N. Bertelli¹, S. Shiraiwa², P. T. Bonoli³, J. Hillairet⁴, T. Kolev⁵, J. Myra⁶, M. Ono^{1,7},
R. Ragona⁸, M. Stowell⁵, and J. Wright²

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

³Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

⁴Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁵Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁶Lodestar Research Corporation, Boulder, CO 80301, USA

⁷Princeton University, Princeton, NJ 08544, USA

⁸Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

Corresponding Author: N. Bertelli, nbertell@pppl.gov

Presenting Author: S. Shiraiwa

See also Poster TH/7-2: P2 Tuesday

Synopsis: via Indico server: IAEA-CN-286-1004

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Energy Deposition and Melt Deformation on the ITER First Wall due to Disruptions and Vertical Displacement Events

J. Coburn¹, M. Lehnen¹, R. A. Pitts¹, E. Thorén², M. Brank³, K. Ibane⁴,
R. R. Khayrutdinov⁵, L. Kos³, V. E. Lukash⁵, and S. Ratynskaia²

¹*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

²*KTH Royal Institute of Technology, Stockholm, Sweden*

³*LECAD Laboratory, University of Ljubljana, 1000 Ljubljana, Slovenia*

⁴*Osaka University, Osaka, Japan*

⁵*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: J. Coburn, jonathan.coburn@iter.org

See also Poster TH/7-3: P4 Wednesday

Synopsis: via Indico server: [IAEA-CN-286-1285](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

KNOSOS, A Fast Neoclassical Code for Three-Dimensional Magnetic Configurations

J. L. Velasco¹, F. Parra², F. J. Escoto^{3,4}, I. Calvo³, J. M. García-Regaña³, and T. Estrada¹

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

²*Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Oxford, UK*

³*Laboratorio Nacional de Fusión (LNF),*

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁴*Universidad Carlos III de Madrid, Madrid, Spain*

Corresponding Author: J. L. Velasco, jose Luis.velasco@ciemat.es

See also Poster TH/7-4: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-0798

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Supercritical Stability of the Large Helical Device Plasmas due to the Kinetic Thermal Ion Effects

M. Sato¹, Y. Todo¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: M. Sato, masahiko@nifs.ac.jp

See also Poster TH/7-5: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0788

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Saturation and Energetic Particle Transport by Toroidal Alfvén Eigenmodes

Z. Qiu¹, L. Chen¹, and F. Zonca²

¹*Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China*

²*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: Z. Qiu, zqiu@zju.edu.cn

Synopsis: via Indico server: IAEA-CN-286-0634

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Theory and Simulation of Low-Frequency Drift Alfvén Waves in Toroidal Fusion Plasmas

F. Zonca¹, L. Chen², I. Chavdarovski³, M. V. Falessi¹, S. Hu⁴, Y. Li², Z. Qiu², and Y. Xiao²

¹ENEA C. R. Frascati, via E. Fermi 45, 00044 Frascati, Italy

²Institute for Fusion Theory and Simulation (IFTS),

Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China

³National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

⁴Guizhou University, Guiyang, Guizhou, People's Republic of China

Corresponding Author: F. Zonca, fulvio.zonca@enea.it

Synopsis: via Indico server: IAEA-CN-286-0643

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

A Benchmark Between HYMAGYC, MEGA and ORB5 Codes using the NLED-AUG Testcase to Study Alfvénic Modes Driven by Energetic Particles

G. Vlad¹, X. Wang², F. Vannini², S. Briguglio³, N. Carlevaro⁴, M. V. Falessi⁴, G. Fogaccia⁴, V. Fusco⁴, F. Zonca³, A. Biancalani², A. Bottino², T. Hayward-Schneider², and P. Lauber²

¹Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³ENEA C. R. Frascati, via E. Fermi 45, 00044 Frascati, Italy

⁴Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

Corresponding Author: G. Vlad, gregorio.vlad@enea.it

Synopsis: via Indico server: IAEA-CN-286-0745

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Trapping in Wave-Particle Interactions in Tokamaks

K. C. Shaing¹, M. García Muñoz², and E. Viezzer²

¹*University of Wisconsin-Madison, Madison, WI 53706, USA*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: K. C. Shaing, kshaing@wisc.edu

Synopsis: via Indico server: IAEA-CN-286-0782

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Numerical Study of the Impact of Fast Ions on TEM-Driven Turbulence

S. Mazzi¹, A. Di Siena², D. Zarzoso³, J. Garcia⁴, K. Shinohara⁵, M. Yoshida⁵, N. Hayashi⁵, S. Benkadda⁶, T. Görler², and Y. Camenen³

¹*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

³*Centre national de la recherche scientifique (CNRS), 75016 Paris, France*

⁴*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁵*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

⁶*Aix-Marseille Université, Marseille, France*

Corresponding Author: S. Mazzi, samuele.mazzi@univ-amu.fr

Synopsis: via Indico server: IAEA-CN-286-0807

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Trapped Particle Resonance Effects on the NTM Driven Losses of Energetic Particles

H. Ferrari¹, R. Farengo¹, P. Garcia-Martinez², and C. Clauser²

¹*Comisión Nacional de Energía Atómica, (CNEA), Buenos Aires, Argentina*

²*Centro Atómico Bariloche (CNEA) and Instituto Balseiro, Bariloche, Río Negro, Argentina*

Corresponding Author: H. Ferrari, hugoemilioferrari@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0648

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Nonlinear Dynamics and Stability Surveys of Energetic Particle Instabilities

D. Spong¹, M. A. Van Zeeland², W. W. Heidbrink³, X. Du², J. Varela⁴, L. García⁵, and Y. Ghai¹

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*University of California Irvine, CA 92697, USA*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁵*Universidad Carlos III de Madrid, Madrid, Spain*

Corresponding Author: D. Spong, spongda@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-0675

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Spatially Dependent Simulations and Model Validation of Runaway Electron Dissipation via Impurity Injection in DIII-D and JET using KORC

M. T. Beidler¹, D. Del-Castillo-Negrete¹, L. R. Baylor¹, J. Herfindal¹, E. M. Hollmann², M. Lehnen³, C. Reux⁴, D. Shiraki¹, and D. Spong¹

The Jet Contributors

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*University of California San Diego, CA 92093, USA*

³*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁴*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: M. T. Beidler, beidlermt@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-0713

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Hybrid Simulations of Fast Ion Transport and Losses due to the Fast Ion Driven Instabilities in the Large Helical Device

R. Seki¹, Y. Todo¹, Y. Suzuki¹, K. Ogawa¹, M. Isobe¹, D. Spong², S. Kamio¹, Y. Fujiwara¹,
and M. Osakabe¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

Corresponding Author: R. Seki, seki.ryohsuke@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0720

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Self-Consistent Quasi-Linear Simulations of Fast Ion Relaxation in the Presence of Alfvénic Oscillations using the Resonance Broadened Quasi-Linear Code RBQ

N. Gorelenkov¹, V. Duarte¹, and H. Berk²

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Texas at Austin, Austin, TX 78712, USA

Corresponding Author: N. Gorelenkov, ngorelen@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1019

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Hybrid Simulation of Fishbone Instabilities with Reversed Safety Factor Profile

W. Shen¹, G. Fu², F. Wang³, L. Xu¹, and Z. Ren⁴

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China*

³*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

⁴*Anhui University, Hefei, Anhui, People's Republic of China*

Corresponding Author: W. Shen, shenwei@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1021

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Alfvén Waves Misbehaving

R. White¹, V. Duarte¹, E. D. Fredrickson¹, M. Podestà¹, and H. Berk²

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Texas at Austin, Austin, TX 78712, USA

Corresponding Author: R. White, rwhite@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1058

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Gyrokinetic Simulations of TAEs in ITER and ASDEX-Upgrade

T. Hayward-Schneider¹, P. Lauber¹, A. Bottino¹, F. Vannini¹, and S. Günter¹

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: T. Hayward-Schneider, thomas.hayward@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1092

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Effect of Partially Ionized High- Z Atoms on Fast Electron Dynamics in Tokamak Plasmas

Y. Peysson¹, D. Mazon², A. Jardin³, K. Krol³, J. Bielecki³, D. Dworak³, M. Scholz³,
O. Embreus⁴, L. Hesslow⁴, T. Fülöp⁴, M. Hoppe⁴, and J. Decker⁵

The WEST (Tore Supra) Team

¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

²*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

³*Institute of Nuclear Physics, Polish Academy of Sciences, PL-31342 Krakow, Poland*

⁴*Chalmers University of Technology, Göteborg, Sweden*

⁵*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

Corresponding Author: Y. Peysson, yves.peysson@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1097

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Polarized Synchrotron Radiation as a Tool for Studying Runaway Electrons

M. Hoppe¹, O. Embreus¹, R. A. Tinguely², B. Brandström¹, and T. Fülöp¹

¹*Chalmers University of Technology, Göteborg, Sweden*

²*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

Corresponding Author: M. Hoppe, hoppe@chalmers.se

Synopsis: via Indico server: [IAEA-CN-286-0623](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

High-Order Coupling of Shear-Alfvén and Acoustic Continua in JET Plasmas

P. Rodrigues¹, D. Borba², F. Cella³, R. Coelho¹, J. Ferreira¹, A. Figueiredo¹,
M. J. Mantsinen^{4,5}, F. Nabais¹, S. Sharapov⁶, and P. Sirén^{7,8}

The Jet Contributors

¹*Institute of Plasmas and Nuclear Fusion (IPFN), Association EURATOM/IST, Lisbon, Portugal*

²*EUROfusion Programme Management Unit Culham, Culham Science Centre, Abingdon, UK*

³*Politecnico di Milano, 20133 Milano, Italy*

⁴*Catalan Institution for Research and Advanced Studies (ICREA), Spain*

⁵*Centro Nacional de Supercomputación (BSC), Barcelona, Spain*

⁶*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁷*Aalto University, Espoo, Finland*

⁸*VTT Technical Research Centre of Finland Ltd., Espoo, Finland*

Corresponding Author: P. Rodrigues, par@ipfn.ist.utl.pt

Synopsis: via Indico server: IAEA-CN-286-1332

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improving Energetic Particle Confinement in Stellarator Reactors

A. Bader¹, M. Drevlak², D. T. Anderson¹, T. Kruger¹, C. C. Hegna¹, S. Henneberg², and A. S. Ware³

¹University of Wisconsin-Madison, Madison, WI 53706, USA

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³University of Montana, Missoula, MT 59812, USA

Corresponding Author: A. Bader, abader@engr.wisc.edu

Synopsis: via Indico server: IAEA-CN-286-0916

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Energetic Particle Dynamics Induced by Off-Axis Neutral Beam Injection on ASDEX-Upgrade, JT-60SA and ITER

P. Lauber¹, G. Meng¹, Z. Lu¹, A. Popa¹, B. Geiger¹, G. Papp¹, L. Gil², G. Conway¹, M. Maraschek¹, G. Por³, P. Poloskei¹, A. Bierwage⁴, K. Shinohara⁴, M. Schneider⁵, S. Pinches⁵, and T. Hayward-Schneider¹

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

³Institute of Nuclear Techniques, Budapest University of Technology and Economics, Budapest, Hungary

⁴National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁵International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: P. Lauber, philipp.lauber@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1074

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Towards the Prediction and Quantification of Energetic Particle Transport and Losses in Fusion Plasmas

D. Zarzoso¹, D. Del-Castillo-Negrete², R. Dumont³, M. Faganello⁴, X. Garbet³,
R. Heinonen⁵, and Y. Sarazin⁶

¹Centre national de la recherche scientifique (CNRS), 75016 Paris, France

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁴Aix-Marseille Université, Marseille, France

⁵University of California San Diego, CA 92093, USA

⁶Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: D. Zarzoso, david.zarzoso-fernandez@univ-amu.fr

Synopsis: via Indico server: IAEA-CN-286-1105

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Helium Ash Removal in DEMO-FNS

A. Y. Dnestrovskiy¹, A. Kukushkin¹, B. V. Kuteev¹, and V. Sergeev²

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²St. Petersburg State Polytechnical University, St. Petersburg, Russian Federation

Corresponding Author: A. Y. Dnestrovskiy, dnestrov0@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1124

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Evolution of High- N TAEs and Ion Heating via Ion Compton Scattering in ITER

J. Seo¹, T. S. Hahm¹, and Y.-S. Na¹

¹*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: J. Seo, sjm4976@snu.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1201

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Numerical Simulation of RE Deconfinement Experiment using Local Magnetic Field Perturbation in ADITYA Tokamak

S. Dutta¹, J. Ghosh¹, R. L. Tanna¹, R. Srinivasan¹, and P. K. Chattopadhyay¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: S. Dutta, sdutta@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1255

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Efficient and Rigorous Evaluation of Fast Particle Losses in Nonaxisymmetric Tokamak Plasmas

K. Särkimäki¹

¹*Chalmers University of Technology, Göteborg, Sweden*

Corresponding Author: K. Särkimäki, konsta.sarkimaki@chalmers.se

Synopsis: via Indico server: IAEA-CN-286-1350

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Extension of the Reduced Energetic Particle Transport ‘Kick’ Model to Low-Frequency Perturbations

M. Podestà¹, J. Yang¹, E. D. Fredrickson¹, M. Gorelenkova¹, and R. White¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: M. Podestà, mpodesta@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0813

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Validation of GAE Simulation and Theory for NSTX(-U) and DIII-D

E. Belova¹, J. Lestz¹, N. Crocker², and E. D. Fredrickson¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*University of California Los Angeles, CA 90095, USA*

Corresponding Author: E. Belova, ebelova@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0865

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Progress in Understanding Alpha Channelling

F. Romanelli¹, F. Cianfrani², S. Briguglio³, A. Cardinali³, and R. White⁴

¹*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

²*Aix-Marseille Université, Marseille, France*

³*ENEA C. R. Frascati, via E. Fermi 45, 00044 Frascati, Italy*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: F. Romanelli, francesco.romanelli@enea.it

Synopsis: via Indico server: IAEA-CN-286-0897

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Generation and Mitigation of Runaway Electrons: Spatio-Temporal Effects in Dynamic Scenarios

D. Del-Castillo-Negrete¹, M. Yang¹, M. T. Beidler¹, and G. Zhang¹

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

Corresponding Author: D. Del-Castillo-Negrete, delcastillod@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-1011

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Theory of β -Induced Alfvén Eigenmode Excited by Energetic Electrons in Tokamak Plasmas

R. Ma¹, Z. Qiu², and W. Chen¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Institute for Fusion Theory and Simulation (IFTS),
Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China

Corresponding Author: R. Ma, rрма@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1154

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Fluid, Kinetic and Hybrid Approaches for Edge Transport Modelling in Fusion Devices

D. Borodin¹, F. Schluck¹, S. Wiesen¹, D. Harting¹, P. Börner¹, S. Brezinsek¹, W. Dekeyser², S. Carli², M. Blommaert², N. Horsten², G. Samaey², M. Baelmans², Y. Marandet³, P. Genesio³, H. Bufferand⁴, and E. Westerhof⁵

¹*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

²*KU Leuven, 3001 Leuven, Belgium*

³*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

⁴*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁵*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

Corresponding Author: D. Borodin, d.borodin@fz-juelich.de

Synopsis: via Indico server: IAEA-CN-286-1063

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Possible Ways to Suppress Anomalous Absorption at ECRH

E. Gusakov¹, A. Popov¹

¹*Ioffe Institute, 194021, St. Petersburg, Russian Federation*

Corresponding Author: E. Gusakov, evggus@yahoo.com

Synopsis: via Indico server: IAEA-CN-286-0679

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Verification and Validation of Plasma Burn-Through Simulations in Preparation for ITER First Plasma

H.-T. Kim¹, A. Mineev², J.-W. Lee³, D. Ricci⁴, and Y.-S. Na⁵

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation*

³*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

⁴*Istituto per la Scienza e Tecnologia dei Plasm (ISTP), CNR, 20125 Milan, Italy*

⁵*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: H.-T. Kim, h-t.kim@euro-fusion.org

Synopsis: via Indico server: IAEA-CN-286-0695

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Validation of an Integrated Modelling Approach to Neutron Emission Studies at JET

Ž. Štancar¹, Z. Ghani², J. Eriksson³, S. Conroy³, M. Gorelenkova⁴, Y. Kazakov⁵,
M. Nocente⁶, V. Radulović¹, K. Kirov², Y. Baranov², H. Weisen⁷, and L. Snoj¹

The Jet Contributors

¹*Jožef Stefan Institute, 1000 Ljubljana, Slovenia*

²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

³*Uppsala University, Uppsala, Sweden*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

⁶*Università degli Studi di Milano-Bicocca, 20126 Milano, Italy*

⁷*EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK*

Corresponding Author: Ž. Štancar, ziga.stancar@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-0701

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of a Novel Integrated Model GOTRESS+ for Predictions and Assessment of JT-60SA Operation Scenarios Including the Pedestal

M. Honda¹, N. Aiba¹, H. Seto², E. Narita¹, and N. Hayashi¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²National Institutes for Quantum and Radiological Science and Technology (QST),
Rokkasho Fusion Institute, Rokkasho-mura, Aomori, Japan

Corresponding Author: M. Honda, honda.mitsuru@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0710

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Burn Control of ITER'S Two-Temperature Plasmas using Optimal and Adaptive Allocation of Actuators with Uncertain Dynamics

V. Graber¹, E. Schuster¹

¹*Lehigh University, Bethlehem, PA 18015, USA*

Corresponding Author: V. Graber, graber@lehigh.edu

Synopsis: via Indico server: IAEA-CN-286-0699

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Quasi-optical Propagation and Absorption of Electron Cyclotron Waves from Both Numerical and Experimental Point of View

K. Yanagihara¹, S. Kubo¹, and I. Dodin²

The LHD Experiment Group

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: K. Yanagihara, yanagihara.kohta@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0766

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Assessment of Neutron Production During Prefusion Operation of ITER

A. Polevoi¹, A. Loarte¹, R. Bilato², N. Gorelenkov^{3,4}, Y. Kazakov⁵, M. Lehnen¹, E. Polunovskiy¹, A. Tchistiakov¹, E. Fable², V. Kiptily⁶, A. Krasilnikov⁷, A. Kuyanov⁸, R. Nazikian³, and S. Pinches¹

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Princeton University, Princeton, NJ 08544, USA

⁵Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

⁶United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁷International Thermonuclear Experimental Reactor (ITER),

Project Centre "ITER", Moscow, Russian Federation

⁸National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: A. Polevoi, alexi.polevoi@iter.org

Synopsis: via Indico server: IAEA-CN-286-0815

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Extrapolation to JET-DT Plasmas using a Combination of Empirical Scaling and the ASCOT Neutral Beam Heating Code

P. Sirén¹, H. Weisen², J. Kilpelainen³, J. Varje¹, and Ž. Štancar⁴

The Jet Contributors

¹VTT Technical Research Centre of Finland Ltd., Espoo, Finland

²EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK

³Aalto University, Espoo, Finland

⁴Jožef Stefan Institute, 1000 Ljubljana, Slovenia

Corresponding Author: P. Sirén, paula.siren@vtt.fi

Synopsis: via Indico server: IAEA-CN-286-1158

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Integrated Analysis of High-Performance Scenarios for the Favorable Vertical Stability Plasma of HL-2M

L. Xue¹, J. Garcia², G. Zheng¹, X. Duan¹, T. Hoang², J.-F. Artaud², J. Li¹, H. Du¹, X. Song¹, M. Xue¹, M. Huang¹, X. Bai¹, H. Wei¹, F. Liu², G. Giruzzi², X. Zou², J. Zhang¹, X. Song¹, and W. Pan¹

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: L. Xue, xuelel@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1173

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Burning Plasma Transport Simulation for Axisymmetric Tokamaks with Alpha-Particle Heating

U. Maurya¹, S. Bainjwan², and R. Srinivasan¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Pandit Deendayal Petroleum University, Raisan, Gandhinagar, 382 007, Gujarat, India*

Corresponding Author: U. Maurya, udaya.maurya@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1336

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Towards a Disruption-Free Plasma: Challenges in Designing a Robust Plasma Termination Phase for ITER

F. M. Poli¹, E. D. Fredrickson¹, E.-H. Kim¹, J. Berkery², and M. Podestà¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Columbia University, New York, NY 10027, USA

Corresponding Author: F. M. Poli, fpoli@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0881

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Propagation of Radio Frequency Waves Through Turbulent Plasmas

A. Ram¹, K. Hizanidis², F. Bairaktaris², A. Papadopoulos², and S.-I. Valvis²

¹*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

²*National Technical University of Athens, Athens, Greece*

Corresponding Author: A. Ram, abhay@mit.edu

Synopsis: via Indico server: [IAEA-CN-286-0909](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Towards Fully-Predictive Transport Modelling in ASDEX-Upgrade H-Modes

G. Tardini¹, C. Angioni¹, N. Bonanomi¹, E. Fable¹, T. Luda¹, M. Dunne¹, and F. Ryter¹

The ASDEX-Upgrade Team

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: G. Tardini, git@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0926

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

3D Full-Wave Fast-Wave Modelling with Realistic HHFW Antenna Geometry and SOL Plasma in NSTX-U

N. Bertelli¹, S. Shiraiwa², G. J. Kramer¹, E.-H. Kim¹, and M. Ono^{1,3}

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

³Princeton University, Princeton, NJ 08544, USA

Corresponding Author: N. Bertelli, nbertell@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0943

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Scenario Development and Exploration of Operating Space for CFETR Plasma

J. Chen¹, V. S. Chan², C. Zhou³, Y. Zhu³, G. Li¹, and Q. Ren¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

²*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

³*Huazhong University of Science and Technology, Hubei, People's Republic of China*

Corresponding Author: J. Chen, jjale.chen@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0959

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Full-Discharge Tokamak Flight Simulator

E. Fable¹

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: E. Fable, emf@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0968

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulation of Equilibrium, Stability, and Transport in Advanced FRCS

S. Dettrick¹, D. C. Barnes¹, E. Belova², F. Ceccherini¹, L. Galeotti¹, S. Galkin¹, S. Gupta¹, K. Hubbard¹, O. Koshkarov¹, C. Lau¹, Z. Lin³, Y. Mok¹, A. Necas¹, B. S. Nicks¹, M. Onofri¹, J. Park¹, S. Putvinski¹, L. Steinhauer¹, T. Tajima^{1,3}, W. Wang³, X. Wei³, K. Yakymenko¹, and P. Yushmanov¹

¹TAE Technologies, Inc., Foothill Ranch, CA 92688, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³University of California Irvine, CA 92697, USA

Corresponding Author: S. Dettrick, sean@tae.com

Synopsis: via Indico server: IAEA-CN-286-0949

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Predictive Multiphysics Integrated Modelling of Tokamak Scenarios using the ITER Integrated Modelling and Analysis Suite (IMAS) in Support of ITER Exploitation

M. Romanelli¹, P. Strand², D. Coster³, J. Ferreira⁴, Y. Dimitriy², J. Thomas⁵, F. Eriksson², M. Park⁶, S. Park⁶, M. Honda⁷, O. Meneghini⁸, S. Smith⁸, T. Slendebroek⁸, H.-T. Kim¹, M. Schneider⁹, and S. Pinches⁹

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Chalmers University of Technology, Göteborg, Sweden

³Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁴Institute of Plasmas and Nuclear Fusion (IPFN), Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal

⁵KTH Royal Institute of Technology, Stockholm, Sweden

⁶Seoul National University, Seoul, Republic of Korea

⁷National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁸General Atomics, San Diego, CA 92186, USA

⁹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: M. Romanelli, michele.romanelli@ukaea.uk

Synopsis: via Indico server: [IAEA-CN-286-1128](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Tungsten Transport in Tokamaks: Towards Real-Time Kinetic-Theory-Based Plasma Performance Optimization

P. Manas¹, C. Angioni¹, J.-F. Artaud², C. Bourdelle², J. Citrin³, E. Fable¹, F. Felici⁴, F. Jenko¹, P. Maget⁵, C. Stephens¹, K. L. van de Plassche⁶, and X. Yang⁷

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

⁴Eindhoven University of Technology, Eindhoven, The Netherlands

⁵Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁶Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

⁷Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

Corresponding Author: P. Manas, pierre.manas@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1146

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Integrated Modelling & Analysis Suite: Developments to Address ITER Needs

S. Pinches¹, L. Abadie¹, H. Ancher², X. Bonnin¹, F. Carpanese³, F. J. Casson⁴, G. Corrigan⁵, S. Dixon⁴, L. Fleury², D. Harting⁶, T. Hayward-Schneider⁷, O. Hoenen⁷, J. Hollocombe⁵, M. Hosokawa¹, F. Imbeaux², A. Ivanov⁸, T. Johnson⁹, L. Jung¹⁰, R. R. Khayrutdinov¹¹, S. H. Kim¹, P. Knight⁴, F. Köchl⁵, S. Konovalov¹¹, P. Lauber⁷, V. E. Lukash¹¹, S. Medvedev⁸, A. Merle³, V. Mitterauer¹, M. Owsiak¹², B. Palak¹², A. Popa⁷, A. Polevoi¹, M. Romanelli⁵, O. Sauter³, M. Schneider¹, G. Tardini⁷, and L. Van Dellen¹³

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁴United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

⁷Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁸Keldysh Institute of Applied Mathematics, RAS, Moscow, Russian Federation

⁹KTH Royal Institute of Technology, Stockholm, Sweden

¹⁰National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

¹¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

¹²Poznan Supercomputing and Networking Center (PSNC), Poznań, Poland

¹³Fircoft Engineering Services Ltd., Warrington, WA3 7QH, UK

Corresponding Author: S. Pinches, simon.pinches@iter.org

Synopsis: via Indico server: [IAEA-CN-286-1165](https://indico.iter.org/event/1000/)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First-Principle-Based Integrated Modelling of Multiple Isotope Pellet Cycles at JET

M. Marin¹, J. Citrin², C. Bourdelle³, Y. Camenen⁴, A. Ho¹, F. J. Casson⁵, L. Garzotti⁵,
F. Köchl⁵, M. Maslov⁵, and M. Valovic⁵

The Jet Contributors

¹*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

²*FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands*

³*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁴*Centre national de la recherche scientifique (CNRS), 75016 Paris, France*

⁵*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

Corresponding Author: M. Marin, m.marin@diffier.nl

Synopsis: via Indico server: IAEA-CN-286-1166

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Relativistic Electrons' Orbit Trajectory Calculation and Calculation Study Analysis in Electron Cyclotron Heating and Current Drive of Tokamak Plasmas

M. M. Alam¹, H. Idei², K. Nakamura², F. Xia³, and M. S. Ahmed¹

¹Bangladesh Atomic Energy Commission (BAEC), Dhaka, Bangladesh

²Interdisciplinary Graduate School of Engineering Sciences (IGSES), Kyushu University, Kasuga, Japan

³Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

Corresponding Author: M. M. Alam, mahbub.baec@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0638

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Self-Consistent Predictive Core-Pedestal ITER Scenario Modelling

T. Rafiq¹, J. Weiland¹

¹*Lehigh University, Bethlehem, PA 18015, USA*

Corresponding Author: T. Rafiq, rafiq@lehigh.edu

Synopsis: via Indico server: IAEA-CN-286-0704

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

First-Principle Based Multichannel Integrated Modelling in Support to the Design of the Divertor Tokamak Test Facility

I. Casiraghi¹, P. Mantica², F. Köchl³, R. Ambrosino⁴, J. Citrin⁵, L. Frassinetti⁶, A. Mariani², P. Vincenzi⁷, P. Agostinetti⁷, B. Baiocchi², A. Cardinali⁸, S. Ceccuzzi⁹, L. Figini², G. Granucci², T. Johnson⁶, P. Martin⁷, M. Valisa⁷, and G. Vlad⁷

¹Università degli Studi di Milano–Bicocca, 20126 Milano, Italy

²Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

³Institute of Atomic and Subatomic Physics, Technische Universität Wien, 1040 Vienna, Austria

⁴Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

⁵FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

⁶KTH Royal Institute of Technology, Stockholm, Sweden

⁷Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

⁸ENEA C. R. Frascati, via E. Fermi 45, 00044 Frascati, Italy

⁹Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

Corresponding Author: I. Casiraghi, i.casiraghi3@campus.unimib.it

Presenting Author: P. Mantica

Synopsis: via Indico server: IAEA–CN–286–0743

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

NBI Heating Modelling for Compass-Upgrade Tokamak using NUBEAM Code

G. Zadvitskiy¹, K. Bogar¹, F. David¹, M. Imříšek², F. Jaulmes¹, K. Lukas¹, I. Senichenkov³,
and D. Tskhakaya¹

¹*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

³*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

Corresponding Author: G. Zadvitskiy, zadvitskiy@ipp.czs.cz

Synopsis: via Indico server: IAEA-CN-286-1169

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Alternating-Hyperbolic Sawtooth

C. Smiet¹, G. J. Kramer¹, and S. R. Hudson¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: C. Smiet, csmiet@pppl.gov

Synopsis: via Indico server: [IAEA-CN-286-0777](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Stabilization of Kink/Peeling Modes by Coupled Rotation and Ion Diamagnetic Drift Effects in QH-Mode Plasmas in DIII-D and JT-60U

N. Aiba¹, X. Chen², K. Kamiya³, M. Honda¹, T. Osborne², K. H. Burrell², and P. B. Snyder²

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²General Atomics, San Diego, CA 92186, USA

³National Institutes for Quantum and Radiological Science and Technology (QST),
Naka Fusion Institute, Naka-shi, Ibaraki-ken, Japan

Corresponding Author: N. Aiba, aiba.nobuyuki@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0783

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonresonant Global Mode in LHD Partial Collapse with Net Toroidal Current

K. Ichiguchi¹, Y. Suzuki¹, Y. Todo¹, S. Sakakibara¹, K. Ida¹, Y. Takemura¹, M. Sato¹,
S. Ohdachi¹, Y. Narushima¹, L. E. Sugiyama², and B. Carreras³

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

³*BACV Solutions Inc., Oak Ridge, TN 37830, USA*

Corresponding Author: K. Ichiguchi, ichiguch@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0797

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Models and Scalings for the Disruption Forces in Large Tokamaks

V. Pustovitev¹

¹*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: V. Pustovitev, pustovitev_vd@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-0658

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Novel Tridimensional Processes in Fusion Burning Plasmas and Gained Innovative Perspectives

B. Coppi¹, B. Basu¹, A. Cardinali¹, and R. Gatto¹

¹*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

Corresponding Author: B. Coppi, coppi@psfc.mit.edu

Synopsis: via Indico server: IAEA-CN-286-1017

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Forces on Tokamak Wall During Disruptions

V. Yanovskiy¹, N. Isernia², V. Pustovitov³, V. Scalera², F. Villone², J. Hromadka¹,
M. Imříšek⁴, J. Havlicek⁴, M. Hron⁴, and R. Panek⁴

¹*Institute of Plasma Physics AS CR v.v.i., Prague, Czech Republic*

²*Consorzio CREATE, Università degli Studi di Napoli Federico II, 80138 Napoli, Italy*

³*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

⁴*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: V. Yanovskiy, yanovskiy@ipp.cas.cz

Synopsis: via Indico server: IAEA-CN-286-1072

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Mitigation in Tokamak Reactor via Reducing the Seed Electrons of Avalanche

B. V. Kuteev¹, V. Sergeev²

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation

Corresponding Author: B. V. Kuteev, kuteev_bv@nrcki.ru

Presenting Author: V. Sergeev

Synopsis: via Indico server: [IAEA-CN-286-1196](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Physics Model of the Rotating Halo Current During VDE Disruption

B.-H. Park¹, J. Kim¹, J. Lee², and J. G. Bak¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

²*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: B.-H. Park, bhpark@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1268

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Requirements for Runaway Electron Avoidance in ITER Disruption Mitigation Scenario by Shattered Pellet Injection

A. Matsuyama¹, E. Nardon², M. Honda¹, T. Shioto¹, and M. Lehnen³

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: A. Matsuyama, matsuyama.akinobu@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0817

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

3D Nonlinear Modelling of Resonant Magnetic Perturbation on EAST

J. Huang¹, Y. Suzuki¹, Y. Liang², Y. Sun³, M. Jia³, N. Chu³, and M. Wu³

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Forschungszentrum Jülich GmbH, Jülich, Germany

³Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

Corresponding Author: J. Huang, huang.jie@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0846

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Vessel Forces from a Vertical Displacement Event in ITER

S. C. Jardin¹, C. Clauser¹, N. Ferraro¹, I. Krebs¹, F. J. Artola², K. Bunkers⁴, C. Sovinec³,
M. Hölzl⁴, F. Villone⁵, G. Rubinacci⁵, N. Isernia⁵, and H. Strauss⁶

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

³University of Wisconsin-Madison, Madison, WI 53706, USA

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁵Consorzio CREATE, Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

⁶HRS Fusion, West Orange, NJ 07052, USA

Corresponding Author: S. C. Jardin, jardin@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0853

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Simulations and Validation of Disruption Mitigation and Projections to ITER'S Disruption Mitigation System

C. C. Kim^{1,2}, V. A. Izzo^{3,4}, R. W. Harvey⁵, Y. Petrov⁵, Y. Liu², B. Lyons²,
J. T. McClenaghan², P. Parks², L. Lao², M. Lehnen⁶, and A. Loarte⁶

¹SLS2 Consulting, San Diego, CA 92107, USA

²General Atomics, San Diego, CA 92186, USA

³Fiat Lux: Fusion in Art, Technology and Life, University of California Berkeley, CA 94720, USA

⁴General Atomics, San Diego, CA 92186, USA

⁵CompX, Del Mar, CA 92014, USA

⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: C. C. Kim, kimcc@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0938

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Disruption Avoidance via RF Current Condensation in Magnetic Islands

A. Reiman¹, L. Bardoczi², N. Bertelli¹, P. T. Bonoli³, M. Brookman², N. Fisch¹, S. Frank³, S. Jin¹, J. Li¹, R. Nies¹, and E. Rodriguez¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²General Atomics, San Diego, CA 92186, USA

³Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: A. Reiman, reiman@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0947

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Transport of NTM-Controlling EC Wave due to Density Fluctuations in European DEMO

A. Snicker¹, E. Poli², O. Maj², and M. Siccino³

¹*Aalto University, Espoo, Finland*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

³*EUROfusion Consortium, 85748 Garching, Germany*

Corresponding Author: A. Snicker, antti.snicker@aalto.fi

Synopsis: via Indico server: IAEA-CN-286-1044

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Taylor Relaxation in Wendelstein 7-X

K. Aleynikova¹, S. R. Hudson², P. Helander¹, Y. Gao¹, J. Geiger¹, J. Loizu³,
C. Nührenberg¹, H. Thomsen¹, and Y. Turkin⁴

The Wendelstein 7-X Team

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: K. Aleynikova, ksenia.aleynikova@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1089

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Passive Deconfinement of Runaway Electrons using an In-Vessel Helical Coil

D. Weisberg¹, C. Paz-Soldan¹, Y. Liu¹, B. Lyons¹, and A. Welander¹

¹General Atomics, San Diego, CA 92186, USA

Corresponding Author: D. Weisberg, weisbergd@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0858

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Energy Balance During Pellet Assimilation

P. Aleynikov¹, A. Arnold¹, B. Breizman², P. Helander¹, D. Kiramov², A. Runov¹, and Y. Turkin¹

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA

Corresponding Author: P. Aleynikov, pavel.aleynikov@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0898

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Gyrokinetic Simulation of Turbulence in Optimized Stellarators

M. D. J. Cole¹, T. Moritaka², R. Hager¹, and C. S. Chang^{3,4}

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

³*Princeton University, Princeton, NJ 08544, USA*

⁴*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

Corresponding Author: M. D. J. Cole, mdjcole@gmail.com

Synopsis: via Indico server: [IAEA-CN-286-0904](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Pellet Ablation Physics Studies for Disruption Mitigation

B. Breizman¹, D. Kiramov¹, A. Fontanilla¹, and P. Aleynikov²

¹*Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA*

²*Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany*

Corresponding Author: B. Breizman, breizman@mail.utexas.edu

Synopsis: via Indico server: IAEA-CN-286-0955

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Nonlinear MHD Modelling of Edge Localized Modes Suppression by Resonant Magnetic Perturbations in ITER

M. Bécoulet¹, A. Loarte², A. Polevoi², G. T. A. Huijsmans¹, S. Futatani³, and S. Pinches²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*Universitat Politècnica de Catalunya (UPC), Barcelona, Spain*

Corresponding Author: M. Bécoulet, marina.becoulet@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0961

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Theory of Quasi-Mode Parametric Decay in Plasmas

Z. Gao¹, Z. Liu¹, K. Chen¹, and A. Zhao¹

¹*Tsinghua University, Haidian, Beijing, People's Republic of China*

Corresponding Author: Z. Gao, gaozhe@tsinghua.edu.cn

Synopsis: via Indico server: IAEA-CN-286-0985

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Excitation of β -Induced Alfvén Eigenmodes by Magnetic Island

H. Cai¹

¹University of Science and Technology of China, Hefei, Anhui, People's Republic of China

Corresponding Author: H. Cai, hscai@mail.ustc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1242

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improved Screening Effect of Seeded High-Z Impurity Through SOL Plasma Flow Enhanced by Additional Low-Z Impurity Injection

S. Yamoto¹, K. Hoshino², Y. Homma³, T. Nakano¹, and N. Hayashi¹

¹*National Institutes for Quantum and Radiological Science and Technology (QST),
Naka Fusion Institute, Naka-shi, Ibaraki-ken, Japan*

²*Keio University, Tokyo, Japan*

³*National Institutes for Quantum and Radiological Science and Technology (QST),
Rokkasho Fusion Institute, Rokkasho-mura, Aomori, Japan*

Corresponding Author: S. Yamoto, yamoto.shohei@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0725

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress Toward Predictive Modelling and In-Situ Monitoring of Tungsten Net Erosion in Tokamak Divertor

S. Abe¹, I. Bykov², D. Ennis³, J. Guterl⁴, C. Johnson³, S. Loch³, D. L. Rudakov²,
G. Sinclair⁴, C. Skinner¹, and P. B. Snyder⁴

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of California San Diego, CA 92093, USA

³Auburn University, Auburn, AL 36849, USA

⁴General Atomics, San Diego, CA 92186, USA

Corresponding Author: S. Abe, shotaa@princeton.edu

Presenting Author: J. Guterl

Synopsis: via Indico server: IAEA-CN-286-0742

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Design of EAST Lower Divertor by Considering Target Erosion and W Ion Transport During the External Impurity Seeding

C. Sang¹, G. Xu², L. Wang², C. Zhang¹, Q. Zhou¹, D. Liu¹, R. Ding², and D. Wang¹

¹*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: C. Sang, sang@dlut.edu.cn

Synopsis: via Indico server: IAEA-CN-286-0761

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Simulation Codes to Treat Hydrogen Molecules Process in Divertor Plasma Region Including Divertor Plate

H. Nakamura¹, S. Saito², S. Keiji³, M. Ryusei³, K. Haga³, G. Kawamura¹, H. Ishihara⁴,
A. Kuzmin⁴, M. Kobayashi¹, and M. Hasuo⁴

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Yamagata University, Yamagata, Japan

³Shinshu University, Matsumoto, Nagano, Japan

⁴Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

Corresponding Author: H. Nakamura, hnakamura@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0804

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulation of Plasma and Neutral Particles During H Gas Puffing in the Divertor Region of Gamma 10/PDX using the Fluid and Kinetic Neutral Code

M. S. Islam¹, Y. Nakashima², S. Ishiguro¹, H. Akiyoshi³, K. Hoshino³, H. Hasegawa¹, N. Ezumi², and M. Sakamoto²

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan*

³*Keio University, Tokyo, Japan*

Corresponding Author: M. S. Islam, islam.mdshahinul@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0709

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Modelling Snowflake Divertors in MAST-U Tokamak

A. Khrabryi¹, V. Soukhanovskii¹, M. Umansky¹, J. Harrison², D. Moulton², and
T. Rognlien¹

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: A. Khrabryi, khrabryi1@llnl.gov

Synopsis: via Indico server: IAEA-CN-286-0771

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

New Predictive Scaling Formula for ITER'S Divertor Heat-Load Width Informed by Gyrokinetic Simulation, Physics Discovery, and Machine Learning

C. S. Chang^{1,2}, A. Loarte³, F. Köchl⁴, J. W. Hughes⁵, J. Menard⁶, M. Romanelli⁷,
R. Churchill⁶, R. A. Pitts³, S.-H. Ku⁶, and V. Parail⁷

¹*Princeton University, Princeton, NJ 08544, USA*

²*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

³*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

⁴*Institute of Atomic and Subatomic Physics, Technische Universität Wien, 1040 Vienna, Austria*

⁵*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

⁶*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁷*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

Corresponding Author: C. S. Chang, cschang@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1006

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ERO2.0, A Code for Three-Dimensional Modelling of Global Material Erosion, Transport and Deposition in Fusion Devices

J. Romazanov¹, S. Brezinsek¹, A. Kirschner¹, D. Borodin¹, A. Eksaeva¹, R. A. Pitts², V. Neverov³, E. Veshchev², M. Groth⁴, S. Wiesen¹, A. Huber¹, and C. Linsmeier¹

The Jet Contributors

¹*Forschungszentrum Jülich GmbH, Jülich, Germany*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

⁴*Aalto University, Espoo, Finland*

⁵*EUROfusion/JET, Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB, UK*

Corresponding Author: J. Romazanov, j.romazanov@fz-juelich.de

Synopsis: via Indico server: IAEA-CN-286-1029

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

An Assessment of Alternative Divertors for the European DEMO

F. Militello^{1,2}, L. Aho-Mantila³, T. Body⁴, H. Bufferand⁵, G. Ciraolo⁶, G. Calabro⁷, D. Coster⁴, G. Di Gironimo⁸, P. Fanelli⁷, N. Fedorczak⁶, A. Herrmann⁴, P. Innocente⁹, R. Ambrosino⁸, R. Kembleton², T. Lunt⁴, D. Marzullo¹⁰, S. Merriman^{1,2}, D. Moulton², A. H. Nielsen¹¹, J. Omotani¹², G. Ramogida¹³, H. Reimerdes¹⁴, M. Reinhart¹⁵, P. Ricci¹⁶, F. Riva^{1,2}, A. Stegmeir⁴, F. Subba¹⁷, W. Suttrop⁴, P. Tamain¹⁸, M. Teschke⁴, A. S. Thrysoe¹¹, W. Treutterer⁴, S. Varoutis¹⁹, M. Wensing¹⁶, M. Wischmeier⁴, and L. Xiang¹

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³VTT Technical Research Centre of Finland Ltd., Espoo, Finland

⁴Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁵Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁶Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁷Università degli Studi della Tuscia, Viterbo, Italy

⁸Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

⁹Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

¹⁰Consorzio CREATE, Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

¹¹Technical University of Denmark (DTU), Copenhagen, Denmark

¹²Chalmers University of Technology, Göteborg, Sweden

¹³ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy

¹⁴Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

¹⁵EUROfusion Consortium, 85748 Garching, Germany

¹⁶École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

¹⁷Politecnico di Torino, 10129 Torino, Italy

¹⁸Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

¹⁹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Corresponding Author: F. Militello, fulvio.militello@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1083

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Modelling of ASDEX-Upgrade Detached Divertor with Radiating X-Point by SOLPS-ITER

I. Senichenkov¹, E. Kaveeva¹, V. Rozhansky², N. Shtyrkhunov¹, and D. Coster³

The ASDEX-Upgrade Team

¹*Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation*

²*St. Petersburg State Polytechnical University, St. Petersburg, Russian Federation*

³*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: I. Senichenkov, i.senichenkov@spbstu.ru

Synopsis: via Indico server: IAEA-CN-286-1090

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress in Edge Plasma Turbulence Modelling: Hierarchy of Models from 2D Transport Applications to 3D Fluid Simulations in Realistic Tokamak Geometry

H. Bufferand¹, A. Gallo², E. Serre³, F. Schwander³, G. Ciraolo⁴, G. Giorgiani³, G. Falchetto⁴, H. Yang¹, J. Bucalossi¹, M. Scotto D'Abusco³, N. Fedorczak⁴, P. Tamain⁵, P. Ghendrih⁴, S. Baschetti³, and Y. Marandet²

The WEST (Tore Supra) and TCV Teams

¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France

³Laboratoire de Mécanique, Modélisation & Procédés Propres (M2P2), Aix-Marseille Université, F-13013 Marseille, France

⁴Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁵Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: H. Bufferand, hugo.bufferand@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1144

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Interpretative Modelling of Impurity Transport and Tungsten Sources in WEST Boundary Plasma

G. Ciraolo¹, A. Gallo², A. Sepetys², N. Fedorczak¹, Y. Marandet², H. Bufferand³, J. P. Gunn⁴, P. Tamain⁴, R. Guirlet¹, C. Guillemaut¹, C. C. Klepper⁵, E. Unterberg⁵, C. Desgranges¹, H. Yang¹, J. Balbin¹, J. Gaspar⁶, J. W. Coenen⁷, Y. Corre¹, J. Romazanov⁷, A. Kirschner⁷, G. van Rooij⁸, S. Brezinsek⁷, C. Bourdelle¹, E. Tsitrone³, and J. Bucalossi³

The WEST (Tore Supra) Team

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

³*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁴*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁵*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

⁶*Institut Universitaire des Systèmes Thermiques Industriels (IUSTI), CNRS, Aix-Marseille Université, Marseille, France*

⁷*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁸*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

Corresponding Author: G. Ciraolo, guido.ciraolo@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1164

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

SOLPS Analysis of Necessary Conditions for Detachment Cliff in HL-2M Advanced Snowflake Minus and DIII-D Conventional Divertors

H. Du¹, G. Zheng¹, X. Duan¹, H. Guo², J. Li¹, L. Xue¹, and Y. Zhou¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: H. Du, duhl@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1174

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulation Study of the Radiation Efficiency of Different Impurity in Divertor Plasma

S. Mao¹, M. Ye¹, and Y. Zhou¹

¹*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

Corresponding Author: S. Mao, sfmao@ustc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1316

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulation Study of the Influence of Flux Expansion on the Detachment Sequence of HFS and LFS Divertor Targets

M. Ye¹, X. Ruan¹, and S. Mao¹

¹*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

Corresponding Author: M. Ye, yemy@ustc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1320

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Validation of Universal Plasma Blob Formation Mechanism

N. K. Bisai¹, S. Banerjee², S. Zweben³, and A. Sen¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*College of William & Mary, Williamsburg, VA 23185, USA*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: N. K. Bisai, nirmal@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1287

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Linear Analysis of Cross-Field Dynamics with Feedback Instability on Detached Divertor Plasmas

H. Hasegawa¹, H. Tanaka², and S. Ishiguro¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Graduate School of Engineering, Nagoya University, Nagoya, Japan

Corresponding Author: H. Hasegawa, hasegawa.hiroki@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0842

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of a Far-SOL Unstructured-Mesh Fluid-Plasma Transport Solver for RF Antenna Simulations

J. D. Lore¹, M. Stowell², D. Green¹, M. Kobayashi³, R. Barnett⁴, J. Wright⁵, and C. Migliore⁵

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

³*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁴*Newcastle University, Newcastle upon Tyne, UK*

⁵*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

Corresponding Author: J. D. Lore, lorejd@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-0637

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of Drifts, Impurities and Neutrals for Credible Predictions of Radiation and Power Flux Asymmetries in the DEMO Scrape-Off Layer

L. Aho-Mantila¹, M. Bernert², F. Subba³, D. Coster², X. Bonnin⁴, and M. Wischmeier²

The Jet Contributors and ASDEX-Upgrade Team

¹VTT Technical Research Centre of Finland Ltd., Espoo, Finland

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Politecnico di Torino, 10129 Torino, Italy

⁴International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: L. Aho-Mantila, leena.aho-mantila@vtt.fi

Synopsis: via Indico server: IAEA-CN-286-0851

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of Turbulence in Modifying Helicon Wave Current Drive Propagation and Efficiency

C. Lau¹, M. Brookman², A. Dimits³, B. Dudson⁴, E. Martin¹, and R. Pinsker²

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

⁴*University of York, Heslington, UK*

Corresponding Author: C. Lau, lauch@ornl.gov

Synopsis: via Indico server: [IAEA-CN-286-0922](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Coupling Plasma and Neutral Kinetic Models: Considerations and Solutions

G. Wilkie¹, D. Stotler¹, R. Churchill¹, and C. S. Chang^{2,3}

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*Princeton University, Princeton, NJ 08544, USA*

³*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

Corresponding Author: G. Wilkie, gwilkie@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1002

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

First Attempt to Quantify the Recycling Neutrals in W7-X by Means of Experiment-Model Comparison

Y. Feng¹, P. Drewelow², Y. Gao², K. Hammond³, T. Kremeyer⁴, H. Niemann², F. Reimold², D. Reiter⁵, L. Rudischhauser², G. Schlisio², U. Wenzel², D. Zhang¹, C. D. Beidler¹, A. Dinklage², M. Endler², M. Jakubowski², M. Krychowiak², R. König², M. Otte², and O. Schmitz⁴

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴University of Wisconsin-Madison, Madison, WI 53706, USA

⁵Heinrich Heine University, Düsseldorf, Germany

Corresponding Author: Y. Feng, feng@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1087

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impact of Plasma Flow Velocity Shear and Neutrals on Edge Plasma Instabilities

S. Krasheninnikov¹, Y. Zhang¹, A. Smolyakov², and M. Medrano¹

¹University of California San Diego, CA 92093, USA

²University of Saskatchewan, SK S7N-5C9, Canada

Corresponding Author: S. Krasheninnikov, skrash@mae.ucsd.edu

Synopsis: via Indico server: IAEA-CN-286-0629

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of Zonal Flow Staircase in Electron Heat Avalanches in KSTAR L-Mode Plasmas

L. Qi¹, M. J. Choi¹, J.-M. Kwon¹, and T. S. Hahm²

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

²*Seoul National University, Seoul, Republic of Korea*

Corresponding Author: L. Qi, qileister@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0651

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Transport Physics of the Density Limit

P. Diamond¹, R. Singh¹, M. Malkov¹, R. Hajjar¹, G. Tynan¹, T. Long², and R. Ke²

¹University of California San Diego, CA 92093, USA

²Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

Corresponding Author: P. Diamond, pdiamond@ucsd.edu

Synopsis: via Indico server: IAEA-CN-286-0674

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulence Model Reduction by Deep Learning

R. Heinonen¹, P. Diamond¹

¹University of California San Diego, CA 92093, USA

Corresponding Author: R. Heinonen, rheinone@ucsd.edu

Synopsis: via Indico server: IAEA-CN-286-0685

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress in Theoretical Understanding of the Dimits Shift and the Tertiary Instability in Drift-Wave Turbulence

H. Zhu¹, Y. Zhou¹, and I. Y. Dodin¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: H. Zhu, hzhu@pppl.gov

Synopsis: via Indico server: [IAEA-CN-286-0770](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

MARS-Q Modelling of Kink-Peeling Instabilities in QH-Mode Plasma

G. Dong¹, Y. Liu², X. Chen², G. Hao¹, Y. Liu¹, S. Wang¹, N. Zhang¹, and G. Xia³

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²General Atomics, San Diego, CA 92186, USA

³Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: G. Dong, donggq@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0641

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Equilibria and Transport Processes in Burning Plasmas

M. V. Falessi¹, S. Briguglio², L. Chen³, Z. Qiu³, and F. Zonca²

¹Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

²ENEA C. R. Frascati, via E. Fermi 45, 00044 Frascati, Italy

³Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China

Corresponding Author: M. V. Falessi, matteo.falessi@enea.it

Synopsis: via Indico server: IAEA-CN-286-0644

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

A New Hybrid Model for Efficient Simulation of Ion Scale Electromagnetic Turbulence in Tokamak Plasma

J. Seo¹, J.-M. Kwon¹, S. Yi¹, K. Kim¹, and L. Qi¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: J. Seo, seojh@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0653

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Global Calculation of Neoclassical Impurity Transport Including the Variation of Electrostatic Potential

K. Fujita¹, S. Satake², M. Nunami², N. Tamura², J. M. García-Regaña³, J. L. Velasco³, and I. Calvo³

¹Graduate University for Advanced Studies (SOKENDAI), Hayama, Kanagawa, Japan

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

³Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

Corresponding Author: K. Fujita, fujita.keiji@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0657

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Neural Network Model of the Multimode Anomalous Transport Module

S. Morosohk¹, E. Schuster¹, and T. Rafiq¹

¹*Lehigh University, Bethlehem, PA 18015, USA*

Corresponding Author: S. Morosohk, morosohk@lehigh.edu

Synopsis: via Indico server: IAEA-CN-286-0698

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Drift-Kinetic Theory of Neoclassical Tearing Modes Close to Threshold in Tokamak Plasmas

H. Wilson¹, A. Dudkovskaia¹, J. Connor², K. Imada¹, P. Hill¹, and S. Leigh¹

¹University of York, Heslington, UK

²United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

Corresponding Author: H. Wilson, howard.wilson@york.ac.uk

Synopsis: via Indico server: [IAEA-CN-286-0706](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Zonal Flow Amplification in Rotating Tokamak Plasmas

S. Yi¹, J.-M. Kwon¹, S. S. Kim¹, and H. Jhang¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: S. Yi, yism@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0726

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Particle Simulation on Merging Processes of two Spherical Tokamak-Type Plasmoids Confined in a Conducting Vessel

S. Usami¹, R. Horiuchi¹, T. Moritaka¹, Y. Ono², M. Inomoto², and H. Tanabe²

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*University of Tokyo, Tokyo, Japan*

Corresponding Author: S. Usami, usami.shunsuke@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0738

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Modelling of Deuterium Radiation Transport in Super-X and Snowflake Divertor Plasmas in MAST-U Tokamak

V. Soukhanovskii¹, A. Khrabryi¹, H. Scott¹, D. Moulton², and J. Harrison²

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: V. Soukhanovskii, vlad@llnl.gov

Synopsis: via Indico server: IAEA-CN-286-0746

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Extended Bounce-Kinetic Model for Trapped Particle Mode Turbulence

T. S. Hahm¹, Y. J. Kim¹, J.-M. Kwon², and L. Qi²

¹*Seoul National University, Seoul, Republic of Korea*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: T. S. Hahm, tshahm@snu.ac.kr

Synopsis: via Indico server: IAEA-CN-286-0768

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Isotope Effects in Ion Temperature Gradient Modes with Radial Electric Field in Large Helical Device

T. Moritaka¹, M. D. J. Cole², R. Hager², S.-H. Ku², C. S. Chang^{3,4}, M. Nunami¹,
S. Ishiguro¹, and H. Sugama¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Princeton University, Princeton, NJ 08544, USA

⁴Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

Corresponding Author: T. Moritaka, moritaka.toseo@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0791

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Gyrokinetic Simulations in Stellarators using Different Computational Domains

E. Sánchez¹, J. M. García-Regaña¹, J. Proll², A. Bañón Navarro³, I. Calvo¹, J. Smoniewski⁴, R. Kleiber⁵, M. Barnes⁶, and F. Parra⁷

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Eindhoven University of Technology, Eindhoven, The Netherlands

³Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁴Lawrence University, Appleton, Wisconsin USA

⁵Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁶Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Oxford, UK

⁷University of Oxford, Oxford, UK

Corresponding Author: E. Sánchez, edi.sanchez@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-0805

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of Core Plasma on the Low Frequency Alfvén and Acoustic Eigenmodes

I. Chavdarovski¹, F. Zonca², and L. Chen³

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

²*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

³*Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China*

Corresponding Author: I. Chavdarovski, chavdarovski@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-0820

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Mechanism of Toroidal Flow Generation by Electron Cyclotron Heating in HSX and LHD Plasmas

Y. Yamamoto¹, S. Murakami², S. Kumar³, J. Talmadge³, K. Likin³, D. T. Anderson³,
H. Yamaguchi^{4,5}, C.-C. Chang¹, H. Takahashi⁴, K. Ida⁴, and M. Yoshinuma⁴

The LHD Experiment Group

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Department of Nuclear Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

³*University of Wisconsin-Madison, Madison, WI 53706, USA*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁵*National Institute for Natural Science (NINS), Minato-ku, Tokyo, 105-0001 Japan*

Corresponding Author: Y. Yamamoto, yamamoto.yasuhiro.85r@st.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0824

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impact of Aspect Ratio on Tokamak Confinement: Nonlinear Gyrokinetic Evidence, WEST Results and Implications for DEMO

Y. Sarazin¹, P. Ghendrih¹, P. Maget², J.-F. Artaud³, L. Colas¹, G. Dif-Pradalier¹, J.-L. Duchateau², X. Garbet², V. Grandgirard¹, R. Guirlet¹, J. Hillairet², J. Morales¹, V. Ostuni¹, C. Passeron¹, B. Pégourié¹, A. Torre¹, and R. Varennes¹

The WEST (Tore Supra) Team

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

³*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: Y. Sarazin, yanick.sarazin@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1035

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Integrated Transport Simulation of LHD Plasma Applying Data Assimilation Technique

Y. Morishita¹, S. Murakami¹, M. Yokoyama², and G. Ueno³

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

³*The Institute of Statistical Mathematics, Research Organization of Information and Systems, Tachikawa, Tokyo Japan*

Corresponding Author: Y. Morishita, yuyah70923@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0843

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Experimental Validation of Neutral Beam Current Drive Simulations in TJ-II Plasmas

D. López-Bruna¹, I. Calvo¹, J. L. Velasco¹, M. J. Mantsinen^{2,3}, T. Kurki-Suonio⁴, S. Mulas¹,
Á. Cappa¹, and J. Kontula⁵

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Catalan Institution for Research and Advanced Studies (ICREA), Spain

³Centro Nacional de Supercomputación (BSC), Barcelona, Spain

⁴Aalto University, Espoo, Finland

Corresponding Author: D. López-Bruna, daniel.lopezbruna@ciemat.es

Presenting Author: S. Mulas

Synopsis: via Indico server: IAEA-CN-286-0850

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigation of Fast Ion Transport Induced by ICRF Heating and MHD Instabilities in JET Plasma Discharges

A. Teplukhina¹, F. M. Poli¹, M. Podestà¹, Y. Kazakov², N. Bertelli¹, and M. Gorelenkova¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

Corresponding Author: A. Teplukhina, ateplukh@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0861

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Gyrokinetic Particle Simulations of Microturbulence in W7-X and LHD Stellarators

J. H. Nicolau¹, H. Wang¹, I. Holod¹, J. Fu¹, J. Bao¹, G. J. Choi¹, Z. Lin¹, P. Liu¹, D. Spong², X. Wei¹, and Y. Xiao³

¹University of California Irvine, CA 92697, USA

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³Institute for Fusion Theory and Simulation (IFTS), Zhejiang University, Xihu, Hangzhou, Zhejiang, People's Republic of China

Corresponding Author: J. H. Nicolau, javier.hn@uci.edu

Synopsis: via Indico server: IAEA-CN-286-0866

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Cross-Scale Interactions Between Trapped-Electron-Mode and Electron-Temperature-Gradient-Mode Turbulence

S. Maeyama¹, T.-H. Watanabe²

¹*Nagoya University, Nagoya, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: S. Maeyama, smaeyama@p.phys.nagoya-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0869

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Building a Turbulence-Transport Workflow Incorporating Uncertainty Quantification for Predicting Core Profiles in a Tokamak Plasma

D. Coster¹, R. Fischer¹, O. Hoenen¹, J. Lakhilili¹, O. Luk¹, R. Preuss¹, B. Scott¹, and U. von Toussaint¹

The ASDEX-Upgrade Team

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: D. Coster, david.coster@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-0896

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Flux Driven Pedestal Formation in Tokamaks: Turbulence Simulations Validated against the Isotope Effect

C. Bourdelle¹, G. De Dominicis¹, G. Fuhr², P. Beyer³, L. Chôné⁴, F. Cianfrani², G. Falchetto¹, Y. Sarazin¹, and X. Garbet⁵

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Aix-Marseille Université, Marseille, France*

³*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

⁴*Aalto University, Espoo, Finland*

⁵*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: C. Bourdelle, clarisse.bourdelle@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0988

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Towards Prediction of ELM Control by RMP in ITER Based on Linear and Quasi-Linear Plasma Response

Y. Liu¹, L. Li², B. Lyons¹, A. Kirk³, A. Loarte⁴, C. Paz-Soldan¹, S. Pinches⁴, A. Polevoi⁴, and A. Turnbull¹

¹General Atomics, San Diego, CA 92186, USA

²Donghua University, Shanghai, People's Republic of China

³Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁴International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: Y. Liu, liuy@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-0996

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Nonlinear Dynamics of Frequency Oscillation of Alfvén Eigenmodes in Toroidal Plasmas

W. Zhang¹, J. Cheng¹, Z. Lin², and D. Li¹

¹*Institute of Physics, Chinese Academy of Sciences, Beijing 100190, People's Republic of China*

²*University of California Irvine, CA 92697, USA*

Corresponding Author: W. Zhang, wzhang@iphy.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1315

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Understanding Reactor Relevant Tokamak Pedestals

C. Ham¹, A. Bokshi², D. Brunetti^{3,1}, G. Bustos Ramirez⁴, B. Chapman¹, J. Connor³,
 D. Dickinson⁵, A. Field³, L. Frassinetti⁶, J. Graves⁷, T. Kiviniemi⁸, S. Leerink⁸,
 B. F. McMillan⁹, S. Newton^{3,1}, S. Pamela^{1,3}, C. Roach¹, S. Saarelma¹⁰, J. Simpson^{3,1},
 S. Smith¹, E. R. Solano¹¹, P. Strand¹², and A. Virtanen⁸

The Jet Contributors

¹Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

²Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁴École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁵York Plasma Institute, University of York, Heslington, UK

⁶KTH Royal Institute of Technology, Stockholm, Sweden

⁷Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁸Aalto University, Espoo, Finland

⁹University of Warwick, Coventry, UK

¹⁰General Atomics, San Diego, CA 92186, USA

¹¹Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹²Chalmers University of Technology, Göteborg, Sweden

Corresponding Author: C. Ham, christopher.ham@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1093

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Mitigation Effects of Fishtail Divertor on ELM Thermal Shock

X. Zhang¹, Y. Li¹, Y. Zhang¹, and Q. Qiu¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: X. Zhang, xdzhang@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1108

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Plasma-Neutral Momentum Exchange and its Applications to Edge Localized Mode and Toroidal Rotation on Tokamaks

K. C. Lee¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: K. C. Lee, klee@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1247

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effect of Pedestal Impurity Li on ELMs During Real-Time Li Powder Injection Studied by BOUT++ MHD Model Coupled with Impurity Module

L. Mao¹, S. Jizhong¹, T. Tengfei², X. Tianyang³, L. Nami¹, and X. Xueqiao⁴

¹*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

²*College of Physics and Optoelectronic Engineering (CIOEE),*

Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China

³*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

⁴*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: L. Mao, maoli_ganf@outlook.com

Presenting Author: S. Jizhong

Synopsis: via Indico server: IAEA-CN-286-1314

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Filament Dynamics using Synthetic and Experimental BES Diagnostics in the Scrape-Off Layer

Ö. Asztalos¹, G. Pokol¹, A. H. Nielsen², D. I. Réfy³, S. Zoletnik³, B. Tál⁴, G. Birkenmeier⁵, G. Hu⁶, and N. Yan⁶

The ASDEX-Upgrade and EUROfusion MST1 Teams,
The Jet Contributors, and the EUROfusion EU-IM Team

¹*Institute of Nuclear Techniques, Budapest University of Technology and Economics, Budapest, Hungary*

²*Technical University of Denmark (DTU), Copenhagen, Denmark*

³*Centre for Energy Research (EK), Hungarian Academy of Sciences, Budapest, Hungary*

⁴*Wigner Research Center, 1525 Budapest, Hungary*

⁵*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁶*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: Ö. Asztalos, asztalos@reak.bme.hu

Synopsis: via Indico server: IAEA-CN-286-1056

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Recent Modelling of Long-Legged Divertor Configurations

D. Moulton¹, A. Fil^{1,2}, O. Myatra^{1,3}, B. Lipschultz³, and B. Dudson³

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

³*University of York, Heslington, UK*

Corresponding Author: D. Moulton, david.moulton@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1125

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Understanding the Effects of Super-X Divertor Configuration on Optimizing Operation Space in DEMO

L. Xiang¹, D. Moulton¹, F. Militello¹, L. Aho-Mantila², D. Coster³, F. Subba⁴,
M. Wischmeier³, T. Lunt³, and M. Wensing⁵

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*VTT Technical Research Centre of Finland Ltd., Espoo, Finland*

³*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁴*Politecnico di Torino, 10129 Torino, Italy*

⁵*École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

Corresponding Author: L. Xiang, lingyan.xiang@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1134

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

5D Continuum Gyrokinetic Simulations of the Electrostatic ITG Instability in Divertor Tokamaks

M. Dorf¹

¹*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

Corresponding Author: M. Dorf, dorf1@llnl.gov

Synopsis: via Indico server: [IAEA-CN-286-0860](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Electromagnetic Schemes in the Global Gyrokinetic PIC Code XGC for Higher-Fidelity Simulation of Long-Wavelength Modes in the Edge

A. Y. Sharma¹, M. D. J. Cole¹, B. J. Sturdevant¹, O. Mishchenko², S.-H. Ku¹, R. Hager¹, and C. S. Chang¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: A. Y. Sharma, asharma@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0937

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Integrating Tokamak-Edge MHD-Fluctuation Modelling with Transport

J. King¹, A. Pankin¹, S. Kruger¹, E. Howell¹, K. H. Burrell², X. Chen², A. M. Garofalo², R. J. Groebner², B. A. Grierson³, S. Haskey³, J. D. Callen⁴, G. R. McKee⁴, Z. Yan⁴, and S. Taheri⁵

¹*Tech-X Corporation, Boulder, CO 80303, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁴*University of Wisconsin-Madison, Madison, WI 53706, USA*

⁵*University of Washington, Seattle, WA 98195, USA*

Corresponding Author: J. King, jking@txcorp.com

Synopsis: via Indico server: [IAEA-CN-286-0948](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ELM Burn-Through Simulations for MAST-U Super-X Plasmas

S. Smith^{1,2}, S. Pamela^{1,2}, A. Fil^{1,2}, M. Hölzl³, G. T. A. Huijsmans⁴, A. Kirk¹, D. Moulton¹,
O. Myatra^{1,5}, A. Thornton¹, and H. Wilson⁵

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

³*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁴*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

⁵*University of York, Heslington, UK*

Corresponding Author: S. Smith, siobhan.smith@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-0990

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear MHD Modelling of Pellet Triggered ELM in JT-60SA

S. Futatani¹, S. Pamela^{2,3}, E. de la Luna⁴, J. Garcia⁵, L. Garzotti^{3,2}, G. T. A. Huijsmans⁶,
and M. Hölzl⁷

¹Universitat Politècnica de Catalunya (UPC), Barcelona, Spain

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁴Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁵Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁶International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁷Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: S. Futatani, shimpei.futatani@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1049

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Verification and Validation of Particle Simulation of Turbulent Transport in FRC

Z. Lin¹

¹*University of California Irvine, CA 92697, USA*

Corresponding Author: Z. Lin, zhihongl@uci.edu

Synopsis: via Indico server: IAEA-CN-286-1219

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Interaction Between Magnetic Geometry and Turbulence in 3D Global Fluid Simulations

E. Serre¹, P. Tamain², H. Bufferand³, G. Ciraolo⁴, D. Galassi⁵, W. Gracias⁶, P. Ghendrih⁴, E. Laribi⁴, B. Luce¹, Y. Marandet⁷, N. Nace⁴, F. Nespoli⁸, and F. Schwander¹

¹Laboratoire de Mécanique, Modélisation & Procédés Propres (M2P2),
Aix-Marseille Université, F-13013 Marseille, France

²Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁴Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁵École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁶Universidad Carlos III de Madrid, Madrid, Spain

⁷Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS,
Aix-Marseille Université, F-13013 Marseille, France

⁸Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: E. Serre, eric.serre@univ-amu.fr

Synopsis: via Indico server: [IAEA-CN-286-1327](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulence Simulations and Braginskii-Style Transport Coefficients Based on High Precision Gyrokinetic Landau Collision Operator

K. Hallatschek¹

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: K. Hallatschek, klaus.hallatschek@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1362

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Influence of High Magnetic Field on Coulomb Collision and Plasma Transport

D. Li¹, C. Dong¹, C. Jiang¹, W. Zhang¹, J. Bao¹, and J. Cao¹

¹*Institute of Physics, Chinese Academy of Sciences, Beijing 100190, People's Republic of China*

Corresponding Author: D. Li, dli@cashq.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1330

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulent Transport of Impurities in 3D Devices

J. M. García-Regaña¹, M. Barnes², E. Sánchez¹, I. Calvo¹, F. Parra³, J. Alcusón⁴,
A. González-Jerez⁵, A. Mollén⁶, J. L. Velasco¹, and A. Zocco⁴

¹Laboratorio Nacional de Fusión (LNF),

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

²Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Oxford, UK

³University of Oxford, Oxford, UK

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁵Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: J. M. García-Regaña, jose.regana@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-0810

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Quasi-linear Turbulent Particle and Heat Transport Modelling with Development of Unique Saturation Rules for Insights into Profile Formation Mechanisms

E. Narita¹, M. Honda¹, M. Nakata², M. Yoshida¹, and N. Hayashi¹

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: E. Narita, narita.emi@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0825

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Kinetic Ion Dynamics in the Electron-Scale Turbulent Transport: A Key Ingredient of Multiscale Interactions in Turbulence

T.-H. Watanabe¹, S. Kusaka¹, T. Oguri¹, and S. Maeyama¹

¹*Nagoya University, Nagoya, Japan*

Corresponding Author: T.-H. Watanabe, watanabe.tomohiko@nagoya-u.jp

Synopsis: via Indico server: IAEA-CN-286-0826

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Investigation of Turbulent Transport in the Inner Core of JET H-Mode Plasmas and Applications to ITER

N. Kumar^{1,2}, Y. Camenen³, S. Benkadda¹, C. Bourdelle⁴, A. Loarte², A. Polevoi², and F. Widmer¹

The Jet Contributors

¹*Aix-Marseille Université, Marseille, France*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*Centre national de la recherche scientifique (CNRS), 75016 Paris, France*

⁴*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: N. Kumar, neeraj.kumar@iter.org

Synopsis: via Indico server: IAEA-CN-286-0841

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Sustainable High Power Density (SHPD) Tokamak to Enable a Compact Fusion Pilot Plant

P. B. Snyder¹, R. J. Buttery¹, T. Abrams¹, J. Canik², B. A. Grierson³, H. Guo¹, C. T. Holcomb⁴, A. E. Järvinen⁴, A. W. Leonard¹, J. Leuer¹, J. T. McClenaghan¹, J. Menard³, O. Meneghini¹, J. M. Park², C. C. Petty¹, R. Pinsker¹, S. Smith¹, E. Strait¹, B. Van Compernelle¹, M. A. Van Zeeland¹, M. R. Wade¹, D. Weisberg¹, and W. Wu¹

¹General Atomics, San Diego, CA 92186, USA

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁴Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

Corresponding Author: P. B. Snyder, snyder@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-1015

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Transport Simulations of Plasmas in Thailand Tokamak 1 and ITER with High Impurity Concentration Scenarios

N. Poolyarat¹, A. Wisitsorasak², J. Promping¹, and T. Onjun¹

¹*Thailand Institute of Nuclear Technology, Bangkok, Thailand*

²*Department of Physics, King Mongkut University of Technology Thonburi, Bangkok, Thailand*

Corresponding Author: N. Poolyarat, noppornp@tint.or.th

Synopsis: via Indico server: IAEA-CN-286-1026

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Modelling of Basic Physics Issues in Toroidal Pinches and Tools for Performance Control

S. Cappello¹, D. Bonfiglio¹, G. Di Giannatale¹, D. Escande², A. Kryzhanovskyy¹, G. Manduchi¹, A. Rigoni¹, F. Sattin¹, L. Spinicci¹, G. Spizzo¹, M. Veranda¹, N. Vivenzi¹, L. Chacòn³, D. Grasso⁴, M. V. Falessi⁵, and F. Pegoraro⁶

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

²*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

³*Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA*

⁴*Institute for Complex Systems (CNR-ISC), Politecnico di Torino, 10129 Torino, Italy*

⁵*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

⁶*Università di Pisa, 56126 Pisa, Italy*

Corresponding Author: S. Cappello, susanna.cappello@cnr.it

Synopsis: via Indico server: IAEA-CN-286-1047

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Local Gyro-Landau Fluid Simulations of Toroidal Drift Wave Modes and Drift-Resistive-Inertial Ballooning Modes in Tokamak Plasmas

J. Xu¹, X. Peng¹, J. Li¹, G. Hao¹, H. Qu¹, W. Chen¹, and J. Li²

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

Corresponding Author: J. Xu, xujq@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1112

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Global Gyrokinetic Investigation of Alfvén Instabilities and Turbulence in Tokamaks

A. Biancalani¹, A. Bottino¹, A. Di Siena¹, O. Gurcan², F. Jenko¹, P. Lauber¹,
O. Mishchenko¹, P. Morel², I. Novikau¹, F. Vannini¹, L. Villard³, and A. Zocco⁴

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

²Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France

³Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

Corresponding Author: A. Biancalani, biancalani@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1143

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Impurity Transport in Collisionless Trapped-Particle-Driven Turbulence

M. Lesur¹, E. Gravier², K. Lim², C. Djerroud², M. Idouakass³, and X. Garbet⁴

¹*Université de Lorraine, CNRS, Nancy, France*

²*Institut Jean Lamour (IJL), Université de Lorraine, CNRS, Nancy, France*

³*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁴*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: M. Lesur, maxime.lesur@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1160

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Theory of Electromagnetic Turbulence Driven Intrinsic Current

L. Wang¹, W. He¹, and G. Zhuang²

¹*Huazhong University of Science and Technology, Hubei, People's Republic of China*

²*University of Science and Technology of China, Hefei, Anhui, People's Republic of China*

Corresponding Author: L. Wang, luwang@hust.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1170

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Kinetic Simulation of Zonal Flow in ADITYA-U Tokamak

A. Kuley¹, T. Singh¹, A. Jaya Kumar¹, S. Sharma², D. Sharma², K. Mishra², and A. Sen²

¹*Indian Institute of Science, Bengaluru, Karnataka, 560012, India*

²*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: A. Kuley, akuley@iisc.ac.in

Synopsis: via Indico server: IAEA-CN-286-1178

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Investigation of Multiscale Ion Temperature Gradient Instabilities and Turbulence in the ADITYA-U Tokamak

A. K. Singh^{1,2}, J. Mahapatra², J. Chowdhury³, R. Ganesh^{2,4}, W. Wang⁵, L. Villard⁶, and S. Ethier⁵

¹International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India

²Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

³Centre for Fusion, Space and Astrophysics, University of Warwick, Coventry, UK

⁴Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India

⁵Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁶Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: A. K. Singh, amitks@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1295

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Fast Modelling of Turbulent Transport in Fusion Plasmas using Neural Networks

K. L. van de Plassche¹, J. Citrin², C. Bourdelle³, Y. Camenen⁴, F. J. Casson⁵, V. Dagnelie¹,
F. Felici⁶, A. Ho¹, and S. Van Mulders⁶

¹Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands

²FOM Institute DIFFER, Association EURATOM-FOM, Nieuwegein, The Netherlands

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Centre national de la recherche scientifique (CNRS), 75016 Paris, France

⁵United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

⁶Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: K. L. van de Plassche, k.l.vandeplassche@diffier.nl

Presenting Author: F. Felici

Synopsis: via Indico server: IAEA-CN-286-1322

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Compact Collisionless Gyro-Landau-Fluid Multimode Multiscale Turbulence Transport Modelling in Tokamak Plasmas

J. Li¹, H. Li², G. Ren², F. Wang¹, Y. Shi¹, M. Jiang¹, K. Imadera³, Z. Wang², and Y. Kishimoto³

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China

³Graduate School of Energy Science, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

Corresponding Author: J. Li, lijq@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1148

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Interplay Between Particle Transport, Zonal Flows and Zonal Density in Dissipative Trapped-Electron Mode Turbulence

M. Leconte¹, L. Qi¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: M. Leconte, mleconte@fastmail.com

Synopsis: via Indico server: IAEA-CN-286-0632

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Influence of Radial Electric Field on Stochastic Diffusion in Wendelstein-Type Stellarators

A. Tykhyi¹, Y. Kolesnichenko¹

¹*Kiev Institute for Nuclear Research, Kiev, Ukraine*

Corresponding Author: A. Tykhyi, tykhyi@kinr.kiev.ua

Synopsis: via Indico server: IAEA-CN-286-0636

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Influence of the Impurities in the Hybrid Discharges with High Power in JET ILW

I. Ivanova-Stanik¹, C. Challis², A. Chomiczewska¹, D. Frigione³, J. Graves⁴, A. Huber⁵, A. Kappatou⁶, E. A. Lerche⁷, M. J. Mantsinen^{8,9}, G. Telesca¹, R. Zagorski¹⁰, and J. Hobirk⁶

The Jet Contributors

¹*Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland*

²*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

³*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

⁴*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

⁵*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

⁶*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁷*Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium*

⁸*Catalan Institution for Research and Advanced Studies (ICREA), Spain*

⁹*Centro Nacional de Supercomputación (BSC), Barcelona, Spain*

¹⁰*Narodowe Centrum Badań Jądrowych (NCBJ), 05-400 Otwock, Świerk, Poland*

Corresponding Author: I. Ivanova-Stanik, irena.ivanova-stanik@ifpilm.pl

Synopsis: via Indico server: IAEA-CN-286-0907

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Turbulent Transport of the W Ions in Tokamak Plasmas

D. I. Palade¹, M. Vlad¹, and F. Spineanu¹

¹National Institute of Laser, Plasma and Radiation Physics (INFLPR), Bucharest, Romania

Corresponding Author: D. I. Palade, dragos.palade@inflpr.ro

Synopsis: via Indico server: IAEA-CN-286-0925

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

An Improved Equation-Free Method for Gyrokinetic Profile Evolution of Tokamak Plasmas

B. J. Sturdevant¹, S. E. Parker², C. S. Chang^{3,4}, and R. Hager¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Colorado, Boulder, CO 80309, USA

³Princeton University, Princeton, NJ 08544, USA

⁴Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea

Corresponding Author: B. J. Sturdevant, bsturdev@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0944

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Collisional Transport and Poloidal Asymmetry Distribution of Impurities in Tokamak Plasmas, with Application to WEST

P. Maget¹, J. Frank², P. Manas¹, T. Nicolas³, O. Agullo², X. Garbet¹, H. Lütjens⁴, J.-F. Artaud⁵, C. Bourdelle⁵, L. Colas⁵, and R. Dumont¹

¹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

²Aix-Marseille Université, Marseille, France

³Centre national de la recherche scientifique (CNRS), 75016 Paris, France

⁴Centre de Physique Théorique, École Polytechnique, 91128 Palaiseau, France

⁵Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

Corresponding Author: P. Maget, patrick.maget@cea.fr

Synopsis: via Indico server: [IAEA-CN-286-0957](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Progress in Understanding Suprathreshold Ion Transport in a Toroidal Plasma Through Theoretical Modelling and Experiments in TORPEX

M. Baquero-Ruiz¹, A. Fasoli¹, I. Furno¹, F. Manke¹, and P. Ricci¹

¹École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

Corresponding Author: M. Baquero-Ruiz, marcelo.baquero@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-0958

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impurity Behavior in JET-ILW Plasmas Fuelled with Gas and/or with Pellets: A Comparative Study with the Transport Code COREDIV

G. Telesca¹, I. Ivanova-Stanik¹, S. Aleiferis², S. Brezinsek³, A. Chomiczewska¹, A. Huber⁴, E. Kowalska-Strzeciwiłk¹, E. Pawelec⁵, C. Perez von Thun¹, and R. Zagorski⁶

The Jet Contributors

¹*Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland*

²*National Centre for Scientific Research, "Demokritos", Athens, Greece*

³*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁴*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

⁵*University of Opole, 45-052 Opole, Poland*

⁶*Narodowe Centrum Badań Jądrowych (NCBJ), 05-400 Otwock, Świerk, Poland*

Corresponding Author: G. Telesca, giuseppe.telesca@ifpilm.pl

Synopsis: via Indico server: IAEA-CN-286-0993

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Phase-Contrast-Imaging Core Fluctuation Diagnostic and First-Principles Turbulence Modelling for JT-60SA

S. Coda¹, A. Iantchenko¹, K. Tanaka², and S. Brunner¹

¹Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

²National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: S. Coda, stefano.coda@epfl.ch

Synopsis: via Indico server: IAEA-CN-286-1012

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Simulation of Heating and Current Drive Sources for Various Scenarios of the ITER Research Plan using the IMAS H&Cd Workflow

M. Schneider¹, V. Mitterauer¹, S. Pinches¹, T. Johnson², I. Arbina³, J.-F. Artaud⁴, D. Van Eester⁵, L. Figini⁶, S. Kojima⁷, E. A. Lerche⁸, M. J. Mantsinen^{9,3}, O. Sauter¹⁰, S. Sipilä¹¹, J. Varje¹², and L. Villard¹⁰

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²KTH Royal Institute of Technology, Stockholm, Sweden

³Centro Nacional de Supercomputación (BSC), Barcelona, Spain

⁴Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁵Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

⁶Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy

⁷Kyushu University, Kasuga, Japan

⁸LPP-ERM/KMS, Association EUROfusion-Belgian State, TEC Partner, 1000 Brussels, Belgium

⁹Catalan Institution for Research and Advanced Studies (ICREA), Spain

¹⁰Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland

¹¹Aalto University, Espoo, Finland

¹²VTT Technical Research Centre of Finland Ltd., Espoo, Finland

Corresponding Author: M. Schneider, mireille.schneider@iter.org

Synopsis: via Indico server: IAEA-CN-286-1183

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Compact Equations for 3D Plasma Equilibrium

V. Ilgisonis¹, E. Sorokina²

¹*ROSATOM State Atomic Energy Corporation, Moscow, Russian Federation*

²*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: V. Ilgisonis, vilkiae@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1222

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Integrated Suite of Codes and its Validation on KSTAR

C. Lee¹, J. Seo¹, S. Park¹, S. Kim¹, J. Lee¹, C. Byun¹, B. Kim¹, J. Kang², L. Jung², H.-S. Kim², S.-H. Hong², and Y.-S. Na¹

¹*Seoul National University, Seoul, Republic of Korea*

²*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: C. Lee, leecyid@snu.ac.kr

Synopsis: via Indico server: IAEA-CN-286-1229

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Studies on Impurity Seeding in a Tokamak Plasma: Simulation and Comparison with ADITYA-U Experiments

N. K. Bisai¹, S. Raj¹, V. Shankar¹, T. Macwan¹, K. Singh¹, S. Dolui¹, H. Raj¹, R. Dey¹, N. Yadava², M. B. Chowdhuri¹, R. Manchanda¹, J. Raval¹, U. K. Nagora¹, K. Jadeja¹, K. Patel¹, R. Kumar¹, S. Aich¹, R. L. Tanna¹, J. Ghosh¹, and A. Sen¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*The National Institute of Engineering, Mysore, Karnataka, India*

Corresponding Author: N. K. Bisai, nirmal@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1251

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental and Simulation Study of Error Field Penetration on EAST

Z.-X. Wang¹, C. Ye¹, Y. Sun², H. Wang², and L. Wei¹

¹*Dalian University of Technology, Liaoning, Dalian, Ganjingzi, People's Republic of China*

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: Z.-X. Wang, zxwang@dlut.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1281

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

The Effect of Plasma Current on the Current Drive of Electron Cyclotron Waves

P. Zheng¹, L. He¹

¹*University of South China, Hengyang, Hunan, People's Republic of China*

Corresponding Author: P. Zheng, pwzheng@usc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1321

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Magnetic Field Studies in Toroidal–Poloidal Systems

M. Salvador¹, G. Vorobyov², J. Gonzalez¹, E. Chapa¹, R. Chavez¹, J. Gonzalez¹, A. Nieto¹,
A. Acosta¹, and L. Hernández¹

¹*Universidad Autónoma de Nuevo León, San Nicolás de los Garza, Nuevo León, Mexico*

²*St. Petersburg State University, 199034, St. Petersburg, Russian Federation*

Corresponding Author: M. Salvador, max.salvadorhr@uanl.edu.mx

Synopsis: via Indico server: IAEA–CN–286–1342

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Intermediate N-Mode Stability in the Negative Triangularity Tokamaks

L. Zheng¹, M. T. Kotschenreuther¹, and F. L. Waelbroeck²

¹*Institute for Fusion Studies (IFS), University of Texas at Austin, Austin, TX 78712, USA*

²*University of Texas at Austin, Austin, TX 78712, USA*

Corresponding Author: L. Zheng, lzheng@austin.utexas.edu

Synopsis: via Indico server: IAEA-CN-286-1223

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Impact of the Negative Triangularity Plasma Shape on the $N=0$ Resistive Wall Mode and Vertical Displacement Event of Tokamak

J. Song¹, H. Lee¹, J. Freidberg², and J. Lee¹

¹*Hanyang University, Seoul, Republic of Korea*

²*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

Corresponding Author: J. Song, sjhsong96@hanyang.ac.kr

Presenting Author: J. Lee

Synopsis: via Indico server: IAEA-CN-286-1233

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effects of Impurity Injection-Site Asymmetries During Disruption Mitigation

A. Y. Aydemir¹, B.-H. Park¹, J. Kim¹, and K. Han²

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

²*University of Science & Technology, Daejeon, Republic of Korea*

Corresponding Author: A. Y. Aydemir, aydemir@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1262

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Magnetic Island Coalescence using Reduced Hall MHD Model

J. Mahapatra¹, R. Ganesh^{1,2}

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India*

Corresponding Author: J. Mahapatra, jaga.physics94@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1302

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Machine Learning Method for Prediction and Detection of Plasma Confinement States and ELM Activity

M. Rajkovic¹, M. Nunami²

¹*Vinča Nuclear Institute, University of Belgrade, Belgrade, Serbia*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: M. Rajkovic, milanr@vin.bg.ac.rs

Synopsis: via Indico server: IAEA-CN-286-1304

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nonlinear Saturation of Toroidal Alfvén Eigenmode by Zonal Fields in DIII-D Plasmas

J. Bao¹, W. Zhang¹, D. Li¹, and Z. Lin²

¹*Institute of Physics, Chinese Academy of Sciences, Beijing 100190, People's Republic of China*

²*University of California Irvine, CA 92697, USA*

Corresponding Author: J. Bao, jbao@iphy.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1309

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Numerical Simulation of Self Consistent Dynamo using a New GPU-Based 3D MHD Solver

S. Biswas¹, R. Mukherjee¹, N. V. Vydyanathan², and R. Ganesh^{1,3}

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*NVIDIA*

³*Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India*

Corresponding Author: S. Biswas, shishir.biswas@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1310

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Low- N Kinetic Ballooning Modes in Spherical Tokamaks

J. Chowdhury¹, B. F. McMillan¹

¹University of Warwick, Coventry, UK

Corresponding Author: J. Chowdhury, jugal.chowdhury@warwick.ac.uk

Presenting Author: B. F. McMillan

Synopsis: via Indico server: IAEA-CN-286-1328

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Quasi-Interchange Modes and Sawteeth

L. E. Sugiyama¹, L. Xu², and M. Okabayashi³

¹*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

²*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: L. E. Sugiyama, sugiyama@mit.edu

Synopsis: via Indico server: IAEA-CN-286-1343

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Linear Excitation and Nonlinear Saturation of Low Frequency Alfvén Eigenmodes in DIII-D

G. J. Choi¹, X. J. Tang^{2,1}, H. Y. Wang^{2,1}, Z. Lin¹, J. Bao^{1,3}, P. Liu¹, J. H. Nicolau¹, X. Wei¹,
and W. Zhang³

¹University of California Irvine, CA 92697, USA

²Fusion Simulation Center, Peking University, Haidian, Beijing, People's Republic of China

³Institute of Physics, Chinese Academy of Sciences, Beijing 100190, People's Republic of China

Corresponding Author: G. J. Choi, gyungjic@uci.edu

Synopsis: via Indico server: IAEA-CN-286-1349

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Formation and Termination of Runaway Beams During Vertical Displacement Events in ITER Disruptions

J. R. Martin-Solis¹, J. A. Mier², M. Lehnen³, and A. Loarte³

¹*Universidad Carlos III de Madrid, Madrid, Spain*

²*Universidad de Cantabria, 39005 Santander, Cantabria, Spain*

³*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: J. R. Martin-Solis, solis@fis.uc3m.es

Synopsis: via Indico server: IAEA-CN-286-1102

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Cold-Hot Coupled Waves in a Flowing Magnetized Plasma

M. U. Lee¹, J.-Y. Ji², and G. Yun¹

¹*Pohang University of Science and Technology (POSTECH), Pohang, Gyeongbuk 790–784, Republic of Korea*

²*Utah State University, Logan, UT 84322, USA*

Corresponding Author: M. U. Lee, minuk@postech.ac.kr

Synopsis: via Indico server: IAEA–CN–286–1117

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Neutronic Design and Assessments of a DCLL BB: Adaptation from DEMO Tokamak to HELIAS Stellarator

I. Palermo¹, F. Warmer², A. Häußler³, and U. Fischer³

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

³*Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany*

Corresponding Author: I. Palermo, iole.palermo@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-0986

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Validation of Pellet Ablation Models and Investigation of Density Fuelling Needs on ITER and CFETR

J. T. McClenaghan¹, L. Lao², J. Zhang³, O. Meneghini², P. Parks², W. Wu², S. Smith², J. Li⁴, K. Li³, J. Candy², P. B. Snyder², V. S. Chan², E. A. Belli², G. M. Staebler², M. Xue⁴, G. Li³, A. Sun⁴, Q. Zang³, T. Zhang³, and G. Zheng⁴

¹*Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

⁴*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: J. T. McClenaghan, mcclenaghanj@fusion.gat.com

Synopsis: via Indico server: IAEA-CN-286-1016

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Modelling of ECRH/ECCD at Different Power Launch Geometry in T-15MD Tokamak

N. Kirneva^{1,2}, A. Borschegovskiy¹, D. Kislov¹, A. Kuyanov¹, I. Pimenov¹, and I. Roi¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²National Research Nuclear University "MEPhI", Moscow, Russian Federation

Corresponding Author: N. Kirneva, kirneva_na@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-1064

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

TECH: Fusion Energy Technology

Completion of the First ITER Toroidal Field Coil in Japan

M. Nakamoto¹, H. Kajitani¹, T. Suwa¹, Y. Takahashi¹, M. Yamane¹, T. Baba¹, K. Sakamoto¹, K. Yoshizawa¹, Y. Uno¹, A. Ishikawa¹, M. Nakahira¹, N. Koizumi¹, M. Inoue², E. Fujiwara², T. Shichijyo², K. Kuno³, T. Minato³, T. Hemmi⁴, and C. Luongo⁴

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Mitsubishi Heavy Industries, LTD, Japan

³Mitsubishi Electric Corporation, Japan

⁴International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: M. Nakamoto, nakamoto.mio@qst.go.jp

See also Poster TECH/1-1: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0655

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status of the ITER Neutral Beam Test Facility and the First Beam Operations with the Full-Size Prototype Ion Source

G. Serianni¹, V. Toigo¹, D. Boilson², C. Rotti², T. Bonicelli³, M. Kashiwagi⁴, and M. Singh⁵

¹*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain*

⁴*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

⁵*ITER, Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: G. Serianni, gianluigi.serianni@igi.cnr.it

See also Poster TECH/1-2Ra: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1099

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Reliability of Electrodeposited Components for Fusion Application: A Process Evaluation of the First Kind

J. Joshi¹, A. Yadav¹, A. K. Chakraborty¹, H. K. Patel¹, and M. Singh¹

Rapporteured by: G. Serianni

¹ITER India, Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

Corresponding Author: J. Joshi, jaydeep.joshi@iter-india.org

See also Poster TECH/1-2Rb: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1319

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress on Performance Tests of ITER-Gyrotrons and Design of Dual-Frequency Gyrotron for ITER Staged Operation Plan

R. Ikeda¹, K. Kajiwara¹, T. Nakai¹, S. Yajima¹, T. Kobayashi¹, M. Terakado¹, K. Takahashi¹, S. Moriyama¹, K. Sakamoto¹, C. Darbos², and M. Henderson²

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

Corresponding Author: R. Ikeda, ikeda.ryosuke@qst.go.jp

See also Poster TECH/1-3Ra: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0787

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

New Developments in Russia of Gyrotrons for Plasma Fusion Installations

G. Denisov¹

Rapporteured by: R. Ikeda

¹*Institute of Applied Physics (IAP), Russian Academy of Sciences (RAS),
Nizhny Novgorod, Russian Federation*

Corresponding Author: G. Denisov, den@ipfran.ru

See also Poster TECH/1-3Rb: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1145

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Progress on the ITER DMS Design and Integration

T. C. Luce¹, U. Kruezi¹, M. Lehnen¹, S. Jachmich¹, M. F. M. de Bock¹, and G. Ellwood¹

¹*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: T. C. Luce, tim.luce@iter.org

See also Poster TECH/1-4Ra: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1344

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Design and Performance of Shattered Pellet Injection Systems for JET and KSTAR Disruption Mitigation Research in Support of ITER

L. R. Baylor¹, S. Meitner¹, T. Gebhart¹, J. Caughman¹, D. Shiraki¹, S. Silburn², S. Park³, J. Kim³, K. P. Kim³, U. Kruezi⁴, M. Lehnen⁴, J. Wilson⁵, A. Muir⁴, G. Ellwood⁴, A. Peacock⁶, D. Craven⁵, S. Jachmich⁴, and M. Fortune⁵

This paper is included in four Rapporteur Presentations:

TECH/1-4: *Rapporteur* by: **T. C. Luce**

EX/5-1: *Rapporteur* by: **S. Jachmich**

EX/5-2: *Rapporteur* by: **D. Shiraki**

EX/5-3: *Rapporteur* by: **J. Kim**

¹Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

²United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

³National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

⁴International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶JET Exploitation Unit, Culham Science Centre, Abingdon, UK

Corresponding Author: L. R. Baylor, baylorlr@ornl.gov

See also Poster TECH/1-4Rb: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0854

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

ITER Plasma Control System Final Design and Preparation for First Plasma

J. Snipes¹, P. de Vries¹, Y. Gribov¹, M. Henderson¹, R. Hunt¹, I. Nunes¹, J. Sinha¹, L. Zabeo¹, W.-R. Lee¹, G. Ambrosino², S. Brémond³, M. Cinque⁴, G. De Tommasi², R. Felton⁵, D. Humphreys⁶, A. A. Kavin⁷, R. R. Khayrutdinov⁸, S. Konovalov⁸, E. Lamzin⁷, V. E. Lukash⁸, M. Mattei⁴, P. Moreau³, A. Mineev⁷, R. Nouaillietas³, A. Pironti⁴, G. Raupp⁹, F. Rimini¹⁰, W. Treutterer⁹, and M. Walker⁶

¹International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

²Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

³Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁴Consorzio CREATE, Università degli Studi di Napoli Federico II, 80138 Napoli, Italy

⁵Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁶General Atomics, San Diego, CA 92186, USA

⁷D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation

⁸National Research Centre "Kurchatov Institute", Moscow, Russian Federation

⁹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

¹⁰United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

Corresponding Author: J. Snipes, joseph.snipes@iter.org

See also Poster TECH/1-5: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1030

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Design Optimization and Safety Assessment of CN HCCB TBS

X. Wang¹, F. Zhao¹, L. Zhang¹, B. Zhou¹, X. Wu¹, H. Liao¹, X. Ye¹, B. Gong¹, Q. Cao¹,
F. Wang¹, K. Feng¹, S. Wu², Q. Sheng², D. Luo³, Y. Yao³, and J. Song³

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²China International Nuclear Fusion Energy Program Execution Center, People's Republic of China

³China Academy of Engineering Physics (CAEP), Mianyang, People's Republic of China

Corresponding Author: X. Wang, wangxy@swip.ac.cn

See also Poster TECH/1-6: P3 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1177

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress in Design and Engineering Issues on JA DEMO

Y. Someya¹, Y. Sakamoto¹, R. Hiwatari¹, Y. Miyoshi¹, S. Kakudate¹, H. Utoh¹,
N. Asakura¹, Y. Homma², N. Nakajima³, and K. Tobita¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²National Institutes for Quantum and Radiological Science and Technology (QST),

Rokkasho Fusion Institute, Rokkasho-mura, Aomori, Japan

³National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: Y. Someya, someya.yoji@qst.go.jp

See also Poster TECH/2-1: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-0802

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Maintenance of a Fusion Power Plant: The EU Approach

O. Crofts¹, T. Tremethick¹, T. Deighan¹, and A. Wilde¹

¹*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

Corresponding Author: O. Crofts, oliver.crofts@ukaea.uk

See also Poster TECH/2-2: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-1286

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Preparing the Systems Code Process for EU-DEMO Conceptual Design

J. Morris¹, S. Muldrew¹, M. Kovari¹, S. Kahn¹, and A. Pearce¹

¹*United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK*

Corresponding Author: J. Morris, james.morris2@ukaea.uk

See also Poster TECH/2-3Ra: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-0806

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

MIRA: A Multiphysics Approach to Designing a Fusion Power Plant

F. Franza¹, L. V. Boccaccini¹, E. Fable², I. A. Maione¹, I. Landman¹, S. Petschanyi¹,
R. Stieglitz¹, and H. Zohm²

Rapporteur by: **J. Morris**

¹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
²Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: F. Franza, fabrizio.franza@kit.edu

See also Poster TECH/2-3Rb: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-0666

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Mission and Configuration Studies for A U.S. Sustained High-Power Density Tokamak Facility

J. Menard¹, T. Brown¹, R. J. Buttery², N. Bertelli¹, B. A. Grierson¹, W. Guttenfelder¹,
R. Maingi¹, and Y. Zhai¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*General Atomics, San Diego, CA 92186, USA*

Corresponding Author: J. Menard, jmenard@pppl.gov

See also Poster TECH/2-4: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-1013

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of Core Radiation Losses from Plasma and its Impact on ST Reactor Design Parameter Choices

S. Deshpande¹, P. Maya¹, A. Tyagi^{2,1}, U. Prasad¹, P. Chaudhuri¹, and S. Padasalagi^{2,1,3}

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India*

³*Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India*

Corresponding Author: S. Deshpande, spd@ipr.res.in

See also Poster TECH/2-5: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-1261

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advanced Second Generation High Temperature Superconductor Wire for Fusion

A. Molodyk^{1,2}, A. Markelov¹, A. Mankevich¹, S. Samoilenkov^{1,2}, and A. Vavilov^{1,2}

¹*S-Innovations, 117246 Moscow, Russian Federation*

²*SuperOx, 117246 Moscow, Russian Federation*

Corresponding Author: A. Molodyk, a.molodyk@superox.ru

See also Poster TECH/2-6: P5 Thursday

Synopsis: via Indico server: IAEA-CN-286-1301

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Accelerated Lifetime Tests of ITER-Like Tungsten Monoblocks in Magnum-PSI

T. Morgan¹, M. Balden², T. Schwarz-Selinger², Y. Li¹, T. Loewenhoff³, M. Wirtz⁴,
S. Brezinsek⁴, and G. De Temmerman⁵

¹*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

²*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

³*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

⁴*Forschungszentrum Jülich GmbH, Jülich, Germany*

⁵*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: T. Morgan, t.w.morgan@diffier.nl

See also Poster TECH/3-1: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0918

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Materials and Components for the DEMO Divertor

R. Neu¹, A. von Müller¹, B. Curzadd¹, J. Riesch¹, J. W. Coenen², H. Greuner¹, K. Hunger¹,
T. Höschen¹, G. Schlick³, U. Siefken⁴, E. Visca⁵, and J.-H. You¹

¹Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

²Forschungszentrum Jülich GmbH, Jülich, Germany

³Fraunhofer Institute for Casting, Composite and Processing Technology IGCV, Germany

⁴Luis Renner GmbH, Powder Metallurgy, Germany

⁵Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

Corresponding Author: R. Neu, rudolf.neu@ipp.mpg.de

See also Poster TECH/3-2Ra: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0649

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Plasma Exhaust and Divertor Designs in Japan and Europe Broader Approach, DEMO Design Activity

N. Asakura¹, K. Hoshino², Y. Homma¹, C. Vorpahl³, F. Subba⁴, H. Utoh¹, Y. Someya¹,
S. Kakudate¹, S. Suzuki¹, Y. Sakamoto¹, R. Hiwatari¹, M. Siccino³, G. Federici³, and
J.-H. You⁵

Rapporteured by: R. Neu

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Graduate School of Science and Technology, Keio University, Tokyo, Japan

³EUROfusion Programme Management Unit Garching, Boltzmannstraße 2, 85748 Garching Germany

⁴Politecnico di Torino, 10129 Torino, Italy

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: N. Asakura, asakura.nobuyuki@qst.go.jp

See also Poster TECH/3-2Rb: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0891

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Advanced Multistep Brazing (AMSB) for Fabrication of the Divertor Heat Removal Component

M. Tokitani¹, Y. Hamaji¹, Y. Hiraoka², S. Masuzaki¹, H. Tamura¹, H. Noto¹, T. Tanaka¹,
T. Tsuneyoshi³, Y. Tsuji³, T. Muroga¹, and A. Sagara¹

The FFHR Design Group

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Okayama University of Science, Okayama, Japan*

³*Nagoya University, Nagoya, Japan*

Corresponding Author: M. Tokitani, tokitani.masayuki@nifs.ac.jp

See also Poster TECH/3-3Ra: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0719

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

An Overview of Thick Tungsten Coatings Prepared by Chemical Vapour Deposition and Manufacture of Relevant Mockups

Z. Chen¹, Y. Lian¹, X. Liu¹, and J. Song²

Rapporteured by: M. Tokitani

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²Xiamen Tungsten Co., Ltd., Xiamen, 361000 People's Republic of China

Corresponding Author: Z. Chen, chenzhe@swip.ac.cn

See also Poster TECH/3-3Rb: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-1122

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

100 Seconds Negative Ion Accelerations for JT-60SA Negative-Ion-Based Neutral Beam Injector

M. Kashiwagi¹, J. Hiratsuka¹, M. Ichikawa¹, G. Q. Saquilayan¹, A. Kojima¹, H. Tobar¹,
N. Umeda¹, K. Watanabe¹, M. Yoshida², and L. Grisham³

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

²*Yamaguchi University, Yamaguchi, Japan*

³*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: M. Kashiwagi, kashiwagi.mieko@qst.go.jp

See also Poster TECH/3-4Ra: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-1175

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Challenges toward Improvement of Deuterium Injection Power in LHD Negative-Ion-Based NBIS

K. Tsumori¹, K. Ikeda¹, M. Kisaki¹, H. Nakano¹, K.-I. Nagaoka¹, M. Osakabe¹, S. Kamio¹,
and Y. Fujiwara¹

Rapporteured by: M. Kashiwagi

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: K. Tsumori, tsumori@nifs.ac.jp

See also Poster TECH/3-4Rb: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0763

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

WEST Actively Cooled Load Resilient Ion Cyclotron Resonance Heating Results

J. Hillairet¹, J.-M. Bernard¹, and L. Colas¹

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: J. Hillairet, julien.hillairet@cea.fr

See also Poster TECH/3-5Ra: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0852

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status of the WEST Travelling Wave Array Antenna Design and Results from the High Power Mock-Up

R. Ragona¹, T. Batal², C. Yu³, J.-M. Bernard², J. Hillairet², P. Mollard⁴, Q. Yang³, H. Xu³, F. Durodié¹, A. Messiaen¹, G. Lombard⁴, F. Durand², J.-M. Delaplanche², R. Dumont², T. Hoang², Y. Song³, S. Agzaf⁴, J. Ongena¹, and M. Van Schoor¹

Rapporteur by: **J. Hillairet**

¹Laboratory for Plasma Physics, ERM/KMS, Brussels, Belgium

²Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁴

Corresponding Author: R. Ragona, riccardo.ragona@rma.ac.be

See also Poster TECH/3-5Rb: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-1085

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Additive Manufacturing of a High Field Side Tokamak Lower Hybrid Current Drive Launcher from GRCOP-84

A. Seltzman¹, S. Wukitch¹

¹*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

Corresponding Author: A. Seltzman, seltzman@mit.edu

See also Poster TECH/3-6: P7 Friday

Synopsis: via Indico server: IAEA-CN-286-0929

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

IFMIF/EVEDA Project: Achievements and Outlooks Beyond 2020

P. Cara¹, A. Facco², A. Kasugai³, D. Radloff⁴, D. Gex¹, G. Micciche⁵, G. Phillips¹, H. Dzitko¹, J. Molla⁶, K. Sakamoto⁷, K. Kondo³, M. Sugimoto⁸, S. Chel⁹, V. Massaut¹⁰, and Y. Carin¹

¹F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

²Istituto Nazionale di Fisica Nucleare (INFN), Italy

³National Institutes for Quantum and Radiological Science and Technology (QST), Rokkasho Fusion Institute, Rokkasho-mura, Aomori, Japan

⁴Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

⁵Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

⁶Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁷Japan Atomic Energy Agency (JAEA), Japan

⁸National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

⁹Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

¹⁰SCK•CEN, Belgian Nuclear Research Centre, 2400 Mol, Belgium

Corresponding Author: P. Cara, philippe.cara@f4e.europa.eu

See also Poster TECH/4-1: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-0650

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Increasing Irradiation and Thermo-Hydraulic Performance of Breeding Blankets by ODS Steel Plating

M. Rieth¹, G. Pintsuk², G. Aiello³, J. Henry⁴, Y. de Carlan⁴, B. Ghidersa¹, H. Neuberger¹, J. Rey¹, M. Duerrschnabel¹, D. Bolich¹, S. Bonk¹, and E. Simondon¹

¹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

²Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

³Commissariat à l'énergie atomique (CEA/Saclay), 91191 Gif-sur-Yvette, France

⁴Service de Recherches Métallurgiques Appliquées, Université Paris-Saclay CEA, Île-de-France, France

Corresponding Author: M. Rieth, michael.rieth@kit.edu

See also Poster TECH/4-2Ra: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-1075

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Effect of Micro-Alloying and Heat Treatment on the Neutron Irradiation Behavior of Eurofer-Type Steels

M. Rieth¹, E. Simondon¹, G. Pintsuk², G. Aiello³, J. Henry⁴, D. Terentyev⁵, A. Puype⁶, N. De Wispelaere⁶, C. Cristalli⁷, L. Pilloni⁸, O. Tassa⁹, M. Klimenkov¹, H.-C. Schneider¹, P. Fernandez¹⁰, T. Gränning¹¹, X. Chen¹¹, A. Bhattacharya¹¹, J. Reed¹¹, J. Geringer¹¹, M. Sokolov¹¹, Y. Katoh¹¹, and L. Snead¹²

Rapporteured by: **M. Rieth**

¹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

²Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany

³EUROfusion Consortium, Power Plant Physics & Technology (PPPT), Boltzmannstraße 2, Garching, Germany

⁴Service de Recherches Métallurgiques Appliquées, Université Paris-Saclay CEA, Île-de-France, France

⁵SCK•CEN, Belgian Nuclear Research Centre, 2400 Mol, Belgium

⁶OnderzoeksCentrum voor de Aanwending van Staal (OCAS), Belgium

⁷Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

⁸Centro Ricerche Casaccia, ENEA-CRC, Rome, Italy

⁹Centro Sviluppo Materiali S.p.A., 38057 Trento, Italy

¹⁰Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

¹¹Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

¹²Irradiation Materials Sciences Consulting (IMSC), Bellport, NY 11713, USA

Corresponding Author: M. Rieth, michael.rieth@kit.edu

Presenting Author: E. Simondon

See also Poster TECH/4-2Rb: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-1079

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status and the Challenge of Japanese Materials Property Handbook to Facilitate Structural Design Criteria for DEMO In-Vessel Components

T. Nozawa¹, H. Tanigawa¹, T. Itoh², N. Hiyoshi³, M. Ohata⁴, T. Kato¹, M. Ando¹,
M. Nakajima¹, and T. Hirose¹

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

²*Ritsumeikan University, Japan*

³*University of Fukui, Fukui, Japan*

⁴*Osaka University, Osaka, Japan*

Corresponding Author: T. Nozawa, nozawa.takashi@qst.go.jp

See also Poster TECH/4-3: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-0727

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The U.S. Approach to Address Plasma-Material Interactions and Fusion Nuclear Science with Linear Plasma Devices

J. Rapp¹, M. Shimada², G. Tynan³, M. Baldwin³, C. Beers⁴, T. Biewer¹, T. Bigelow¹, J. Caneses¹, J. Caughman¹, R. Chen³, F. Cheng³, R. Doerner³, R. Duckworth¹, R. Goulding¹, W. Hicks¹, M. Kaufman¹, C. Lau¹, A. Lumsdaine¹, D. Nishijima³, M. Patino³, B. Schwendeman³, M. Simmonds³, C. Taylor², D. West¹, J. Yu³, and A. Zoloznick³

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

²*Idaho National Laboratory (INL), Idaho Falls, ID 83415, USA*

³*University of California San Diego, CA 92093, USA*

⁴*University of Tennessee, Knoxville, TN 37996, USA*

Corresponding Author: J. Rapp, rappj@ornl.gov

See also Poster TECH/4-4: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-0773

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Validated Multiphysics Modelling Approach to Predicting Erosion, Redeposition and Gas Retention in Fusion Tokamak Divertors

A. Lasa¹, D. E. Bernholdt², S. Blondel¹, J. Canik², M. Cianciosa², D. Curreli³, R. Doerner⁴, J. Drobny³, W. R. Elwasif², D. Green², J. P. Gunn⁵, D. Nishijima⁴, P. C. Roth², G. Shaw¹, E. Tsitrone⁶, E. Unterberg², T. R. Younkin¹, and B. D. Wirth^{1,7}

¹University of Tennessee, Knoxville, TN 37996, USA

²Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

³University of Illinois, Urbana–Champaign, IL 61820, USA

⁴University of California San Diego, CA 92093, USA

⁵Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

⁶Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

⁷Oak Ridge Associated Universities (ORAU), Oak Ridge, TN 37831, USA

Corresponding Author: A. Lasa, aesquisa@utk.edu

See also Poster TECH/4-5: P8 Friday

Synopsis: via Indico server: IAEA–CN–286–0954

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Progress in Shattered Pellet Injection Technology in Support of the ITER Disruption Mitigation System

T. Gebhart¹, L. R. Baylor¹, M. N. Ericson¹, S. Meitner¹, and D. Rasmussen¹

¹*Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA*

Corresponding Author: T. Gebhart, gebhartge@ornl.gov

Synopsis: via Indico server: IAEA-CN-286-0775

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Development of the ITER Enhanced Heat Flux First Wall Panels with Mechanically Attached Plasma Facing Finger Units

J. Chen¹, P. Wang¹, K. Wang², L. Bao³, X. Zhu¹, J. Wu¹, S. Gicquel³, Q. Li¹, A. R. Raffray³,
M. Xu¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*China International Nuclear Fusion Energy Program Execution Center, People's Republic of China*

³*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: J. Chen, chenjm@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1193

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

The Design of an ITER EHF First Wall Panel with Mechanically Attached Plasma-Facing Fingers

J. Wu¹, J. Chen¹, L. Bao², P. Wang¹, K. Wang³, S. Gicquel², X. Zhu¹, H. Gao¹, Q. Li¹,
W. Kang¹, and A. R. Raffray²

¹Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China

²International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

³China International Nuclear Fusion Energy Program Execution Center, People's Republic of China

Corresponding Author: J. Wu, wj@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1192

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Completion of Assembly and High-Voltage Insulation Test of DC 1 MV Power Supply System for the ITER Neutral Beam Test Facility

H. Tobari¹, M. Kashiwagi¹, K. Watanabe¹, T. Maejima¹, Y. Yamashita¹, A. Kojima¹, M. Dairaku¹, S. Sasaki¹, N. Shibata¹, J. Hiratsuka¹, S. Konno¹, M. Boldring², L. Zanotto², S. Dal Bello², V. Toigo², M. Simon³, and H. Decamps⁴

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

²*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

³*F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain*

⁴*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: H. Tobari, tobari.hiroyuki@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0890

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Integration of ITER Diagnostic Ports in BINP

A. Burdakov¹, M. Ivantsivskiy¹

¹*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

Corresponding Author: A. Burdakov, a.v.burdakov@inp.nsk.su

Synopsis: via Indico server: IAEA-CN-286-1273

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Progress in Physics and System Integration of ITER Core X Ray Crystal Spectrometer

A. Bader¹, M. F. M. de Bock², R. Barnsley², and Z. Cheng³

¹*Fircroft Engineering Services Ltd., Warrington, WA3 7QH, UK*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

³*Huazhong University of Science and Technology, Hubei, People's Republic of China*

Corresponding Author: A. Bader, abader88@hotmail.fr

Synopsis: via Indico server: IAEA-CN-286-1100

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Large Scale Experimental Facility for Assessment the Performances of the Vacuum Vessel Pressure Suppression System of ITER

D. Aquaro¹, A. Pesetti¹, and A. Marini¹

¹*Università di Pisa, 56126 Pisa, Italy*

Corresponding Author: D. Aquaro, aquaro@ing.unipi.it

Synopsis: via Indico server: IAEA-CN-286-0687

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

MHD Velocity Distribution and Pressure Drop in Manifolds of a WCLL TBM

C. Mistrangelo¹, L. Bühler¹, and I. Ricipito²

¹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

²F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

Corresponding Author: C. Mistrangelo, chiara.mistrangelo@kit.edu

Presenting Author: L. Bühler

Synopsis: via Indico server: IAEA-CN-286-1308

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status of the Design Optimization, Analysis and R&D Activities of Indian HCSB Blanket Program

P. Chaudhuri¹, D. Sharma¹, B. K. Yadav¹, A. Shrivastava¹, M. Panchal¹, C. S. Sasmal¹,
A. Gandhi¹, R. Patel¹, A. Saraswat¹, and A. Sircar¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: P. Chaudhuri, paritosh@ipr.res.in

Synopsis: via Indico server: [IAEA-CN-286-1277](#)

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Preprint: Available following the Conference

Poster: Available following the Conference

JT-60SA TF Coils Steady-State Regime: Acceptance Tests Modelling with CEA Simulation Codes and First Extrapolations to Tokamak Operation

L. Zani¹, W. Abdel Maksoud², F. Bonne³, P. Hertout¹, C. Hoa⁴, B. Lacroix¹, Q. Le Coz⁵, S. Nicolle¹, A. Torre¹, A. Louzguiti¹, R. Vallcorba², F. Michel⁶, and F. Nunio²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Institut de recherche sur les lois fondamentales de l'Univers (IRFU), Commissariat à l'énergie atomique (CEA/Saclay), 91191 Gif-sur-Yvette, France*

³*Université Grenoble-Alpes, Grenoble, France*

⁴*Commissariat à l'énergie atomique (CEA/Grenoble), 38054 Grenoble, France*

⁵*Assystem, F-84120, Pertuis, France*

⁶*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: L. Zani, louis.zani@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1129

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Achievement of Precise Assembly of the JT-60SA Superconducting Tokamak

G. Matsunaga¹, Y. Shibama¹, F. Okano¹, J. Yagyu¹, M. Takechi¹, K. Kizu¹, K. Hamada¹,
H. Murakami¹, V. Tomarchio², E. DiPietro², S. Mizumaki³, K. Sagawa³, A. Hayakawa³,
S. Moriyama¹, and M. Hanada¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

³Toshiba Energy Systems & Solutions Corporation, Kanagawa 212-8585, Japan

Corresponding Author: G. Matsunaga, matsunaga.go@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0822

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Power Supply Commissioning to Achieve DC Power Control for Superconducting Coils in JT-60SA

K. Shimada¹, K. Yamauchi¹, S. Hatakeyama¹, Y. Ohmori¹, J. Okano¹, T. Terakado¹, S. Moriyama¹, G. Frello², L. Novello², A. Maistrello³, and E. Gaio³

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

³Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy

Corresponding Author: K. Shimada, shimada.katsuhiko@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0751

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Commissioning of JT-60SA Cryogenic System with Active Control to Mitigate Heat Load Fluctuation

K. Hamada¹, K. Fukui¹, K. Kawano¹, K. Natsume¹, E. DiPietro², M. Wanner², F. Bonne³, C. Hoa⁴, P. Roussel⁴, A. Cardella², V. Lamaison⁴, J. Legrand⁵, B. Langevine⁶, K. Ohtsu¹, A. Honda¹, H. Ichige¹, T. Isono¹, Y. Kashiwa¹, K. Usui¹, and M. Sato¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

³Université Grenoble-Alpes, Grenoble, France

⁴Commissariat à l'énergie atomique (CEA/Grenoble), 38054 Grenoble, France

⁵Air Liquide

⁶Engie Ineo, 92 059 Paris la Défense Cedex, France

Corresponding Author: K. Hamada, hamada.kazuuya@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0877

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of the Thermal Insulation Devices for the JT-60SA Tokamak

Y. Shibama¹, G. Matsunaga¹, K. Kizu¹, F. Okano¹, J. Yagyu¹, J. Botija², M. Medorano²,
K. Sagawa³, A. Hayakawa³, S. Moriyama¹, E. DiPietro⁴, and M. Hanada¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

³Toshiba Energy Systems & Solutions Corporation, Kanagawa 212-8585, Japan

⁴F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

Corresponding Author: Y. Shibama, shibama.yusuke@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0849

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Tokamak T-15MD: Preparing for Physical Start-Up

P. Khvostenko¹, I. Anashkin¹, E. Bondarchuk², A. Chudnovskiy¹, N. Kirneva¹, V. Kochin¹,
E. Kuzmin¹, I. Levin¹, V. Leonov¹, A. Lutchenko¹, A. Modyaev¹, A. Nikolaev¹, G. Notkin¹,
A. Romannikov³, I. Roi¹, M. Sokolov¹, and A. Sushkov¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation

³SSC RF "Troitsk Institute of Innovative and Thermonuclear Research" (TRINITI),
Moscow region, Russian Federation

Corresponding Author: P. Khvostenko, khvostenko_pp@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-1061

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

NSTX-U Recovery Project Progress towards First Plasma

S. P. Gerhardt¹, D. Cai¹, A. Cao¹, M. Cropper¹, J. Galayda¹, J. Mitchell¹, P. Titus¹, M. Sibilila¹, J. Klabacha¹, F. Hoffmann¹, M. Kalish¹, J. Petrella¹, T. Jernigan¹, W. Gattoni¹, S. Raftopoulos¹, J. Dellas¹, C. Pagano¹, L. Hill¹, A. Jariwala¹, C. Freeman¹, R. Ellis¹, R. Hawryluk¹, T. Stevenson¹, G. Swider¹, D. Loesser¹, B. Stratton¹, J. Malo¹, P. Dugan¹, M. Smith¹, G. Tchilinguirian¹, M. Viola¹, and Y. Zhai¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

Corresponding Author: S. P. Gerhardt, sgerhard@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1238

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Cryogenics System Performance Enhancement and Attempt towards Shaped Plasma Operation in SST-1

V. L. Tanna¹, U. Prasad¹, P. Panchal¹, R. Panchal¹, D. Sonara¹, R. Patel¹, G. Mahesuria¹, A. Garg¹, G. L. N. Srikanth¹, D. Christian¹, R. Sharma¹, N. Bairagi¹, H. Nimavat¹, K. Patel¹, P. Shah¹, G. Purwar¹, A. Panchal¹, P. Raj¹, N. Kumar¹, S. Roy¹, C. Dodiya¹, A. Makwana¹, Z. Khan¹, D. C. Raval¹, P. Thankey¹, F. K. S. Pathan¹, Y. Paravastu¹, B. Doshi¹, P. Biswas¹, H. Patel¹, D. Sharma¹, S. Nair¹, R. Srinivasan¹, and D. Raju¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: V. L. Tanna, vipul@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1253

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advancement of the PPPL Straight Leg Quasi-Axisymmetric Stellarator (QAS) Design

T. Brown¹, D. Gates¹, N. Pomphrey¹, J. Breslau¹, K. Hammond¹, Y. Zhai¹, and C. Zhu¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: T. Brown, tbrown@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0625

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Development of Engineering Design for Quasi-Axisymmetric Stellarator CFQS

A. Shimizu¹, M. Isobe¹, S. Okamura¹, M. Nakata¹, K. Ogawa¹, Y. Yoshimura¹, C. Suzuki¹,
M. Osakabe¹, S. Kinoshita¹, T. Murase¹, S. Nakagawa¹, H. Tanoue¹, Y. Xu², H. Liu²,
H. Liu², J. Huang², X. Wang², G. Xiong², D. Yin³, Y. Wan³, and C. Tang⁴

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Southwest Jiaotong University, Chengdu, Sichuan, People's Republic of China

³Hefei Keye Electro Physical Equipment Manufacturing Co., Ltd, People's Republic of China

⁴Sichuan University, Chengdu, Sichuan, People's Republic of China

Corresponding Author: A. Shimizu, akihiro@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0828

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Stellarator Simplification with Permanent Magnets

D. Gates¹, K. Hammond¹, C. Zhu¹, T. Brown^{2,1}, K. Corrigan¹, S. Cowley¹, and
M. Zarnstorff¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²Princeton University, Princeton, NJ 08544, USA

Corresponding Author: D. Gates, dgates@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0932

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Towards Simpler Coils for Optimized Stellarators

C. Zhu¹, A. Bader², D. Gates¹, K. Hammond¹, S. R. Hudson¹, T. Kruger², H. Liu³, Y. Song⁴,
Y. Wan⁴, Y. Xu⁵, and M. Zarnstorff¹

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Wisconsin-Madison, Madison, WI 53706, USA

³Institute of Fusion Science, School of Physical Science and Technology, Southwest Jiaotong University,
Chengdu, Sichuan, People's Republic of China

⁴Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁵Southwest Jiaotong University, Chengdu, Sichuan, People's Republic of China

Corresponding Author: C. Zhu, czhu@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0912

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Confinement Studies with Low Recycling Walls in LTX- β

R. Majeski¹, J. Anderson², R. E. Bell¹, T. Biewer³, D. P. Boyle¹, W. Capecchi², D. Donovan⁴,
D. B. Elliott³, C. Hansen⁵, P. E. Hughes¹, R. Kaita¹, B. E. Koel⁶, T. Kozub¹, S. Kubota⁷,
B. P. Leblanc¹, R. Lunsford¹, A. Maan¹, E. Merino¹, S. Oliva², E. T. Ostrowski¹, T. Rhodes⁷,
F. Scotti⁸, V. Soukhanovskii⁸, and L. Zakharov^{6,1}

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²University of Wisconsin-Madison, Madison, WI 53706, USA

³Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831, USA

⁴University of Tennessee, Knoxville, TN 37996, USA

⁵University of Washington, Seattle, WA 98195, USA

⁶Princeton University, Princeton, NJ 08544, USA

⁷University of California Los Angeles, CA 90095, USA

⁸Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

Corresponding Author: R. Majeski, rmajeski@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1062

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Design Study of Large Superconducting Coil System for JA DEMO

H. Utoh¹, Y. Itoh², R. Hiwatari¹, Y. Sakamoto¹, Y. Someya¹, N. Asakura¹, Y. Miyoshi¹,
Y. Homma³, N. Nakajima⁴, and K. Tobita¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Fukui University of Technology, Fukui, Japan

³National Institutes for Quantum and Radiological Science and Technology (QST),

Rokkasho Fusion Institute, Rokkasho-mura, Aomori, Japan

⁴National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: H. Utoh, uto.hiroyasu@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0827

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

EU DEMO Cryogenic System and Cryodistribution: Preconceptual Design for an Optimal Cooling of the Superconducting Magnets and the Thermal Shields

C. Hoa¹, V. Lamaison², S. Ciattaglia³, J.-M. Bernhardt⁴, M. Roig⁴, D. Till⁴, B. Anseaume⁴,
and M. Wanner³

¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

²*Commissariat à l'énergie atomique (CEA/Grenoble), 38054 Grenoble, France*

³*EUROfusion Consortium, 85748 Garching, Germany*

⁴*Air Liquide Advanced Technologies*

Corresponding Author: C. Hoa, christine.hoa@cea.fr

Synopsis: via Indico server: [IAEA-CN-286-1337](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Plant Concept Options of Energy Production in JA DEMO and its Adaptability for Ancillary Service in Future Grid

R. Hiwatari¹, K. Okano², K. Katayama³, Y. Mihoshi¹, N. Asakura¹, H. Utoh¹, Y. Homma¹, Y. Someya¹, Y. Sakamoto¹, and K. Tobita¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Keio University, Tokyo, Japan

³Kyushu University, Kasuga, Japan

Corresponding Author: R. Hiwatari, hiwatari.ryoji@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0876

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Analysis of Heat Transport and Pipe-Routing Considerations for Blanket to Steam Generator for a Fusion Reactor

P. Prajapati¹, P. Chaudhuri¹, D. Sharma¹, S. Padasalagi^{2,1,3}, and S. Deshpande¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India*

³*Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India*

Corresponding Author: P. Prajapati, piyush.prajapati@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1324

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Planning Study of Virtual DEMO Based on Computer Simulations

H. K. Chung¹, J.-M. Kwon¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: H. K. Chung, hchung.hedp@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0670

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Current Status of DEMO Activated Waste Studies

G. Bailey¹, M. Gilbert¹, T. Berry¹, T. Eade¹, C. Bachmann², and U. Fischer³

¹*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

²*EUROfusion Consortium, 85748 Garching, Germany*

³*Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany*

Corresponding Author: G. Bailey, greg.bailey@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1121

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress on the Neutronic and Shielding Analyses of CFETR

Q. Cao¹, F. Zhao¹, X. Wang¹, X. Wu¹, M. Yin¹, and S. Qu¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: Q. Cao, caoqx@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1218

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Concept Development and Candidate Technologies Selection for the Main DEMO-FNS Fuel Cycle Systems

S. Ananyev¹, B. V. Kuteev¹, B. Ivanov¹, and A. Spitsyn¹

¹*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: S. Ananyev, ananyev_ss@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-0640

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development and Integration Study of Fusion-Fission Hybrid Systems into Nuclear Power Fuel Cycle

Y. Shpanskiy¹, B. V. Kuteev¹

¹*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: Y. Shpanskiy, shpanski@mail.ru

Synopsis: via Indico server: IAEA-CN-286-1333

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Fusion Devices as Neutron Sources for FFH (Fusion-Fission Hybrid Reactors): Analysis of Tokamak Parameters, Readiness Level and Design of Concept Validation Experiments

F. P. Orsitto¹, M. Carta², N. Burgio², V. Fabrizio², L. Falconi², M. Palomba², F. Panza², and M. Salvatore³

¹*Consorzio CREATE, Università degli Studi di Napoli Federico II, 80138 Napoli, Italy*

²*Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy*

³*Idaho National Laboratory (INL), Idaho Falls, ID 83415, USA*

Corresponding Author: F. P. Orsitto, fporsitto@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0864

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Stellarators as a Fast Path to Fusion

A. Boozer¹

¹*Columbia University, New York, NY 10027, USA*

Corresponding Author: A. Boozer, ahb17@columbia.edu

Synopsis: via Indico server: IAEA-CN-286-0646

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Direct Recycling of Fuel Gas from Divertor Pumping and its Impact on Tritium Self-Sufficiency of DEMO without Initial Loading

S. Konishi¹, K. Mukai², R. Hiwatari³, K. Isobe³, S. Masuzaki⁴, M. Tanaka⁴, M. Hara⁵, J. Yagi¹, and K. Katayama⁶

¹*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

³*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁵*University of Toyama, Toyama, Japan*

⁶*Kyushu University, Kasuga, Japan*

Corresponding Author: S. Konishi, s-konishi@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0895

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Fusion Specific Technology Readiness Levels

N. Prinja¹, S. M. González de Vicente²

¹John Wood Group PLC, Aberdeen, AB11 6EQ Scotland, UK

²International Atomic Energy Agency (IAEA), Vienna, Austria

Corresponding Author: N. Prinja, nawal.prinja@woodplc.com

Synopsis: via Indico server: IAEA-CN-286-0633

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Process Intensification in Water Detritiation System: A Case Study

S. Gupta¹, N. Shenoy¹, V. Kandalam¹, S. Mohan¹, and K. Bhanja¹

¹*Bhabha Atomic Research Centre (BARC), Mumbai, India*

Corresponding Author: S. Gupta, sulabhg@barc.gov.in

Synopsis: via Indico server: [IAEA-CN-286-0764](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

High-Temperature Superconducting Magnet System for the Next-Generation Helical Device

N. Yanagi¹, T. Mito¹, J. Miyazawa¹, S. Matsunaga², Y. Onodera¹, N. Hirano¹,
Y. Narushima¹, S. Ito³, H. Tamura¹, S. Hamaguchi¹, H. Hashizume³, and K. Takahata¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Department of Fusion Science, Graduate University for Advanced Studies (SOKENDAI), Toki, Gifu, Japan*

³*Tohoku University, Sendai, Miyagi, Japan*

Corresponding Author: N. Yanagi, yanagi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0882

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Modelling of Hydrogen Trapping, Diffusion and Permeation in Tokamak

C. Grisolia¹, E. Hodille¹, M. Pečovnik², M. Ialovega¹, E. Bernard¹, T. Angot³, C. Martin³, Y. Ferro³, J. M. Layet³, R. Sakamoto⁴, S. Benannoune⁵, Y. Charles⁵, A. De Baker⁵, R. Delaporte-Mathurin¹, J. Mougénot⁵, C. Becquart⁶, T. Schwarz-Selinger⁷, M.-F. Barthe⁸, R. Bisson³, and S. Markelj²

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

²*Jožef Stefan Institute, 1000 Ljubljana, Slovenia*

³*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

⁴*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁵*Laboratoire des Sciences des Procédés et des Matériaux (LSPM), CNRS, Université Paris 13, 93430 Villetaneuse, France*

⁶*Unité Matériaux et Transformations (UMET), CNRS, INRAE, Université de Lille, Métropole européenne de Lille, France*

⁷*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

⁸*Conditions Extrêmes et Matériaux: Haute Température et Irradiation (CEMHTI), Université d'Orléans, Orléans Cedex 2, France*

Corresponding Author: C. Grisolia, christian.grisolia@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0976

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Prototype Tests of the Electromagnetic Particle Injector Concept Demonstrating its Primary Advantages for Fast Time Response Disruption Mitigation in Tokamaks

R. Raman¹, S. C. Jardin², C. Clauser², R. Lunsford², J. Menard², and M. Ono^{2,3}

¹University of Washington, Seattle, WA 98195, USA

²Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

³Princeton University, Princeton, NJ 08544, USA

Corresponding Author: R. Raman, raman@aa.washington.edu

Synopsis: via Indico server: IAEA-CN-286-1001

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Dual Coolant Lithium Lead Breeding Blanket: Status and Perspectives

D. Rapisarda¹, I. Fernández-Berceruelo¹, Á. García¹, J. M. García¹, B. Garcinuño¹,
M. González¹, C. Moreno¹, I. Palermo¹, F. Roca-Urgorri¹, and Á. Ibarra¹

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

Corresponding Author: D. Rapisarda, david.rapisarda@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-1034

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of the European WP on Optical Materials for DEMO Diagnostics and Control: Current Activities and Perspectives

R. Vila¹, G. Pintsuk², and E. Diegele³

¹*Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain*

²*Forschungszentrum Jülich GmbH, Jülich, Germany*

³*EUROfusion Consortium, 85748 Garching, Germany*

Corresponding Author: R. Vila, rafael.vila@ciemat.es

Synopsis: via Indico server: IAEA-CN-286-1059

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Neutronics Effect Study of Homogeneous Model on Solid Breeder Blanket

S. Qu¹, Q. Cao¹, X. Duan¹, X. Wang², Z. Li¹, and X. Wang¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*Fusion Power System LLC, San Diego, CA 92127, USA*

Corresponding Author: S. Qu, qushen@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1198

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Investigations of Coupling MHD Duct Flows under Inclined Transversal Magnetic Fields for Liquid Metal Blankets

X. Zhang¹, W. Lei¹, and P. Chuanjie¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: X. Zhang, zhangxj@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1205

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Fragmentation Behaviors and Mechanical Properties of the Tritium Breeder Pebble Bed for Fusion Blanket

B. Gong¹, H. Cheng¹, L. Wang¹, Y. Feng¹, and X. Wang¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: B. Gong, gongbp@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1241

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Solution to Evacuate Enormous Gas Load in a Fusion Machine During Baking and Plasma Operation: Cryopump

R. Gangradey¹, S. S. Mukherjee¹, V. Gupta¹, J. S. Mishra¹, P. A. Nayak¹, and P. Panchal¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: R. Gangradey, ranjana@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1274

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Experimental Validation of Tritium Recovery System from Liquid Pb-Li Breeding Blanket by Vacuum Sieve Tray Concept

F. Okino¹, Y. Hamaji², J. Yagi¹, T. Tanaka², S. Konishi¹, A. Sagara², and T. Muroga²

¹*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: F. Okino, fumito.okino@iae.kyoto-u.ac.jp

Synopsis: via Indico server: [IAEA-CN-286-0708](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Low-Resistance Joint Development for Segment-Fabrication of High-Temperature Superconducting Fusion Magnets

S. Ito¹, H. Tamura², N. Yanagi², and H. Hashizume¹

¹*Tohoku University, Sendai, Miyagi, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: S. Ito, satoshi.ito@qse.tohoku.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0724

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Designing and Experimental Validation of Prototypes of Liquid Lithium Plasma Facing Components for Steady-State Tokamak

A. Vertkov¹, M. Zharkov¹, I. Lyublinski¹, A. Berlov¹, S. Mirnov², V. Lazarev²,
V. Vershkov³, and G. Notkin³

¹JSC "Red Star", Moscow, Russian Federation

²SSC RF "Troitsk Institute of Innovative and Thermonuclear Research" (TRINITI),
Moscow region, Russian Federation

³National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: A. Vertkov, avertkov@yandex.ru

Synopsis: via Indico server: [IAEA-CN-286-0762](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

TECH Evaluation of Tritium Production Rate in a Blanket Mock-Up using a Compact Fusion Neutron Source

K. Mukai¹, Y. Ogino¹, M. Kobayashi², K. Ogawa², M. Isobe^{2,3}, J. Yagi¹, and S. Konishi¹

¹*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

³*National Institute for Natural Science (NINS), Minato-ku, Tokyo, 105-0001 Japan*

Corresponding Author: K. Mukai, k-mukai@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0819

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Electrochemical Approaches for the Development of a Liquid Blanket System

J. Yagi¹, T. Okada², H. Miyagaki², Y. Ogino², K. Mukai², H. Noto³, T. Tanaka³, and S. Konishi²

¹*Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

²*Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan*

³*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: J. Yagi, j-yagi@iae.kyoto-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0838

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

New Compact Torus Injection System on KTX Reversed Field Pinch Device

C. Chen¹, T. Lan¹, G. Zhuang², D. Kong³, S. Zhang³, Y. Song³, J. Li³, S. Zhang¹, J. Wu¹, T. Deng¹, J. Zhu¹, Y. Yu¹, Z. Wu¹, W. Mao¹, A. Liu¹, J. Xie¹, H. Li¹, W. Ding⁴, C. Xiao⁵, and W. Liu¹

¹University of Science and Technology of China, Hefei, Anhui, People's Republic of China

²Huazhong University of Science and Technology, Hubei, People's Republic of China

³Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁴University of California Los Angeles, CA 90095, USA

⁵University of Saskatchewan, SK S7N-5C9, Canada

Corresponding Author: C. Chen, scichen@mail.ustc.edu.cn

Synopsis: via Indico server: IAEA-CN-286-1070

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Project of the Fuel Cycle Based on the Example of the Ignitor Tokamak at the Russian Site

M. Rozenkevich¹, A. Bukin¹, M. Subbotin², S. Marunich¹, and Y. Pak¹

¹*D. Mendeleev University of Chemical Technology of Russia, Moscow, Russian Federation*

²*National Research Centre "Kurchatov Institute", Moscow, Russian Federation*

Corresponding Author: M. Rozenkevich, rozenkev@mail.ru

Synopsis: via Indico server: IAEA-CN-286-1140

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Benchmark-Experiment for Evaluating Nuclear Data Libraries used to Model Subcritical Blanks of Thermonuclear Installations

A. Zhirkin¹, Y. Titarenko¹, K. Pavlov¹, S. Meshchaninov¹, S. Obudovsky¹, S. Lushin¹, V. Blandinsky¹, Y. Kashchuk¹, V. Petrov¹, B. V. Kuteev¹, A. Dudnikov¹, A. Kovalishin¹, P. Alekseev¹, and A. Titarenko¹

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

Corresponding Author: A. Zhirkin, zhirkin_av@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-1163

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Implementation of Novel Technique to Support the Electromagnetic Forces and to Ensure the Structural Reliability of Refurbished Toroidal Field Magnet System of the ADITYA-U Tokamak

B. Doshi¹, J. Ghosh¹, and R. L. Tanna¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: B. Doshi, doshi@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1266

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Entrapment of Impurities Inside a Cold Trap: A Purification Process for Removal of Corrosion Impurities from Molten Pb-16Li

A. Deoghar¹, A. Saraswat¹, H. Tailor¹, S. Verma¹, S. Gupta¹, C. S. Sasmal¹, V. Vasava¹,
S. Sahu¹, A. Prajapati¹, and R. Bhattacharyay¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: A. Deoghar, ankushvd@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1270

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Thermal Hydraulic Modelling and Analysis of ITER Tungsten Divertor Monoblock

S. E.-D. El-Morshedy¹

¹*Egyptian Atomic Energy Authority (EAEA), Cairo, Egypt*

Corresponding Author: S. E.-D. El-Morshedy, s.e.elmorshedy@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0624

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Advanced Positron Annihilation Studies of CuCrZr Alloys for Fusion Technology

V. Slugen¹, P. Domonkos¹

¹*Institute of Nuclear and Physical Engineering, Slovak University of Technology, Bratislava, Slovakia*

Corresponding Author: V. Slugen, vladimir.slugen@stuba.sk

Synopsis: via Indico server: IAEA-CN-286-0654

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of Fusion Research Activities in the Republic of Kazakhstan

I. Tazhibayeva¹, E. Batyrbekov¹, D. Zarva¹, B. Chektybayev¹, V. Baklanov¹,
E. Koyanbayev¹, Y. Gordienko¹, Y. Ponkratov¹, and T. Kulsartov¹

¹*Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan*

Corresponding Author: I. Tazhibayeva, tazhibayeva@ntsc.kz

Synopsis: via Indico server: IAEA-CN-286-0671

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Recent Progress in the Assessment of Irradiation Effects for In-Vessel Fusion Materials: Tungsten and Copper Alloys

D. Terentyev¹, M. Rieth², G. Pintsuk³, J. Riesch⁴, A. von Müller⁵, S. Antusch², K. Mergia⁶, E. Gaganidze², C.-H. Schneider², M. Wirtz³, S. Nogami⁷, and J. W. Coenen³

¹SCK•CEN, Belgian Nuclear Research Centre, 2400 Mol, Belgium

²Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

³Forschungszentrum Jülich GmbH, Jülich, Germany

⁴Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

⁶National Centre for Scientific Research, "Demokritos", Athens, Greece

⁷Tohoku University, Sendai, Miyagi, Japan

Corresponding Author: D. Terentyev, dterenty@sckcen.be

Synopsis: via Indico server: IAEA-CN-286-0847

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Observation of Tungsten Plasma-Facing Components after the First Phase of Operation of the WEST Tokamak

M. Diez¹, V. Bruno¹, Y. Corre², E. Delmas¹, M. Firdaouss², L. Gargiulo¹, A. Grosjean¹, J. P. Gunn³, T. Loarer², E. Tsitroni¹, M. Missirlan¹, and M. Richou¹

¹*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

²*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),*

Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France

³*Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: M. Diez, mathilde.diez@cea.fr

Synopsis: via Indico server: IAEA-CN-286-0911

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

R&D Progress of the Divertor Material/Component Testing Facilities of Craft

H.-S. Zhou¹, M. Lei¹, J. Zheng¹, Q. Li¹, Q. Qi¹, F. Ding¹, B. Li¹, Z. Zhang¹, W. Wang¹,
X. Mao¹, J. Shen¹, G.-N. Luo¹, S. Liu¹, K. Lu¹, and Y. Song¹

¹*Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China*

Corresponding Author: H.-S. Zhou, haishanzhou@ipp.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1110

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Reduction of Critical Heat Flux due to Steep Power Transients on PFCS

V. Menon¹, M. Sharma¹, S. Khirwadkar¹, K. S. Bhope¹, S. Belsare¹, S. Tripathi¹, N. P. Patel¹, M. Mehta¹, P. K. Mokaria¹, T. H. Patel¹, R. Swamy¹, and K. Galodiya¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: V. Menon, vinay289@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1211

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Divertor Design for Low-Recycling Regime Tokamak: Concept, Experiments and Simulations

E. Kolemen¹, A. Fisher¹, A. Khodak¹, R. Maingi¹, and R. Majeski¹

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

Corresponding Author: E. Kolemen, ekolemen@princeton.edu

Synopsis: via Indico server: IAEA-CN-286-1339

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Upgraded Design and Modelling of Prototype of the Lithium Divertor Module of KTM Tokamak

M. Zharkov¹, A. Vertkov¹, I. Lyublinski¹, A. Berlov¹, I. Tazhibayeva², Y. Ponkratov², and Y. Gordienko²

¹JSC "Red Star", Moscow, Russian Federation

²Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan

Corresponding Author: M. Zharkov, mg-dist@yandex.ru

Synopsis: via Indico server: IAEA-CN-286-0765

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

Active Mitigation System for Protecting Solid and/or Liquid Divertor PFCS from Transient High Heat Flux Events in Fusion Reactors

M. Ono^{1,2}, R. Raman³, W. Choe⁴, Y. Hirooka⁵, and N. Tamura⁶

¹*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

²*Princeton University, Princeton, NJ 08544, USA*

³*University of Washington, Seattle, WA 98195, USA*

⁴*Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Republic of Korea*

⁵*Chubu University, Kasugai, Aichi, Japan*

⁶*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

Corresponding Author: M. Ono, mono@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-1003

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Study of Negative Ion Beam Optics in Real and Phase Spaces

M. Kisaki¹, K.-I. Nagaoka¹, Y. Haba², K. Tsumori¹, H. Nakano¹, K. Ikeda¹, Y. Fujiwara¹,
and O. Masaki¹

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Nagoya University, Nagoya, Japan

Corresponding Author: M. Kisaki, kisaki.masashi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0734

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Characteristics of the Extracted Negative-Ion Beam in a Cesium-Free Negative-Ion Source using TPDsheet-U

A. Tonegawa¹, H. Kaminaga¹, T. Takimoto¹, K. Hanai¹, K. Sato², and K. Kawamura¹

¹*Tokai University, Tokyo, Japan*

²*Tokyo University of Science, Tokyo, Japan*

Corresponding Author: A. Tonegawa, atone@tsc.u-tokai.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0845

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Progress on NIO1 Ion Source and on Energy Recover Tests

M. Cavenago¹, V. Antoni², C. Baltador¹, M. Barbisan^{2,1}, R. Delogu², D. Martini¹, A. Minarello¹, A. Pimazzoni¹, G. Serianni², F. Taccogna³, M. Ugoletti², V. Valentino⁴, V. Variale⁴, and P. Veltri⁵

¹*Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro (LNL), Legnaro, Italy*

²*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

³*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

⁴*Istituto Nazionale di Fisica Nucleare Sezione di Bari (INFN-BA), 70125 Bari, Italy*

⁵*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: M. Cavenago, cavenago@lnl.infn.it

Synopsis: via Indico server: IAEA-CN-286-1054

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Neutral Beam Injection for Fusion Reactors: Technological Constraints versus Functional Requirements

C. Hopf¹, G. Starnella¹, N. den Harder¹, and U. Fantz¹

¹*Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany*

Corresponding Author: C. Hopf, christian.hopf@ipp.mpg.de

Synopsis: via Indico server: IAEA-CN-286-1088

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of 28/35 Ghz Dual-Frequency and 14 Ghz Gyrotrons for Advanced Fusion Devices

T. Kariya¹, R. Minami¹, T. Imai¹, T. Numakura¹, F. Motoyoshi¹, Y. Endo¹, H. Idei², T. Onchi³, S. Kojima⁴, K. Hanada², T. Shimozuma⁵, S. Kubo⁵, M. Ono^{6,7}, K. Nagasaki⁸, T. Eguchi⁹, Y. Mitsunaka⁹, and M. Sakamoto¹

¹Plasma Research Center, University of Tsukuba, Tsukuba, Ibaraki, Japan

²Research Institute for Applied Mechanics (RIAM), Kyushu University, Kasuga, Japan

³Kyushu University, Kasuga, Japan

⁴Kyushu University, Fukuoka, Fukuoka Prefecture, Japan

⁵National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁶Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁷Princeton University, Princeton, NJ 08544, USA

⁸Institute of Advanced Energy, Kyoto University, Nishikyo-ku, Kyoto 615-8540, Japan

⁹Canon Electron Tubes and Devices Co., Ltd, Japan

Corresponding Author: T. Kariya, kariya@prc.tsukuba.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0756

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High Field Side Launch Lower Hybrid Current Drive for CFETR

G. M. Wallace¹, B. Ding², M. H. Li², J. Chen², S. G. Baek¹, P. T. Bonoli³, S. Shiraiwa¹,
L. Liu², and C. Wu²

¹Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA

²Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

³Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: G. M. Wallace, wallaceg@mit.edu

Synopsis: via Indico server: IAEA-CN-286-0779

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Megawatt Radiofrequency Ion Source for the Neutral Beam Injector on HL-2A Tokamak

L. Yan¹, G. Lei¹, M. H. Li¹, X. Zhang¹, M. Zhao¹, Y. Bu¹, W. Xie¹, Y. Zhang¹, G. Zou¹, H. Wei¹, L. Huang¹, S. Geng¹, X. Ma¹, Q. Yu¹, J. Cao¹, B. Lu¹, Z. Shi¹, C. Zhou¹, M. Xu¹, and X. Duan¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: L. Yan, lwyan@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-0836

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

High Power Gyrotron Development for Advanced Fusion Devices

G. Gantenbein¹, K. Avramidis¹, I. Chelis², B. Ell¹, S. Illy¹, J. Jin¹, J. Jelonnek¹,
Z. Ioannidis¹, H. Laqua³, I. Tigelis², M. Thumm¹, S. Stanculovic¹, T. Rzesnicki¹, T. Ruess¹,
I. Pagonakis¹, and S. Marsen³

¹Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

²National and Kapodistrian University of Athens (NKUA), Zografou, Greece

³Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

Corresponding Author: G. Gantenbein, gerd.gantenbein@kit.edu

Synopsis: via Indico server: IAEA-CN-286-1142

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Development of High-Voltage Negative Ion Based Neutral Beam Injector for Fusion Devices

O. Sotnikov¹, A. Ivanov¹, G. Abdrashitov¹, Y. Belchenko¹, A. Gorbovsky¹, P. Deichuli¹,
A. Dranichnikov¹, I. Emelev¹, V. Kolmogorov¹, A. Kondakov¹, A. Sanin¹, and
I. Shikhovtsev¹

¹*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

Corresponding Author: O. Sotnikov, soz91@rambler.ru

Synopsis: via Indico server: [IAEA-CN-286-1180](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Novel Surface Assisted Volume Negative Ion Source: Concept to Reality

M. Bandyopadhyay^{1,2}, B. Kakati¹, S. S. Kausik¹, A. Gahlaout¹, B. K. Saikia¹, and N. Das¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*Homi Bhabha National Institute (HBNI), Anushakti Nagar, Mumbai 400094, India*

Corresponding Author: M. Bandyopadhyay, mainakband@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1245

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Performance of High Heat Flux Test of Positive Ion Neutral Injector Ion Source Back Plate

M. R. Jana¹, S. Belsare¹, K. S. Bhope¹, B. Choksi¹, N. S. Contractor¹, S. Khirwadkar¹,
P. K. Mokaria¹, N. P. Patel¹, T. H. Patel¹, R. Swamy¹, and S. Tripathi¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

Corresponding Author: M. R. Jana, muktijana@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1264

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Technological Exploitation of the JET Nuclear Environment: Progress in Neutron Field Characterization and ITER Materials Irradiation

L. Packer¹, P. Batistoni², S. Bradnam¹, S. Conroy³, M. Fabbri⁴, Z. Ghani¹, M. Gilbert¹,
S. Jednorog⁵, E. Laszynska⁵, D. Leichtle⁴, I. Lengar⁶, J. Mietelski⁷, C. Nobs¹,
O. Ogorodnikova⁸, M. Pillon², M. Savva⁹, I. Stamatelatos⁹, T. Vasilopoulou⁹, R. Villari²,
A. Wojcik-Gargula⁷, and R. Worrall¹

The Jet Contributors

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA), Rome, Italy

³Uppsala University, Uppsala, Sweden

⁴F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

⁵Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland

⁶Jožef Stefan Institute, 1000 Ljubljana, Slovenia

⁷Institute of Nuclear Physics, Polish Academy of Sciences, PL-31342 Krakow, Poland

⁸National Research Nuclear University "MEPhI", Moscow, Russian Federation

⁹National Centre for Scientific Research, "Demokritos", Athens, Greece

Corresponding Author: L. Packer, lee.packer@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1297

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Concept of the ICR Plasma Heating System for Ignitor-Like Tokamak in Relation to the Russian Site

M. Subbotin¹, A. Belov¹, A. Gubin², and D. Genman²

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²D. V. Efremov Institute of Electrophysical Apparatus (JSC-NIIEFA), St. Petersburg, Russian Federation

Corresponding Author: M. Subbotin, subbotin_ml@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-1331

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

NNBI for ITER: Status of Long Pulses in Deuterium at the Test Facilities Batman Upgrade and ELISE

D. Wunderlich¹, R. Riedl¹, F. Bonomo¹, I. Mario¹, A. Mimo¹, C. Wimmer¹, U. Fantz¹,
B. Heinemann¹, and W. Kraus¹

The NNBI Team

¹Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: D. Wunderlich, dirk.wuenderlich@ipp.mpg.de

Synopsis: via Indico server: [IAEA-CN-286-1197](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Compatibility of Conventional and Reduced Activation Ferritic/Martensitic Steels in Liquid Pb-Li: A Comparative Study

P. Chakraborty Srivastava¹, V. Singh¹, D. Sharma², V. Kain¹, and R. Tewari¹

¹*Bhabha Atomic Research Centre (BARC), Mumbai, India*

²*Amity Institute of Nuclear Science & Technology, Amity University, Noida, India*

Corresponding Author: P. Chakraborty Srivastava, poulamic@barc.gov.in

Synopsis: via Indico server: [IAEA-CN-286-0639](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Preparation of the High Heat Flux Materials for CFETR Divertor

X. Liu¹

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

Corresponding Author: X. Liu, xliu@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1133

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Role of PKA Spectrum and PKA Density in Defect Production and Implications for H-Isotope Trapping in Tungsten

P. Maya¹, P. Sharma^{2,1}, S. S. Mukherjee³, S. Akkireddy¹, S. Balaji⁴, C. David⁴,
A. R. Gautam⁵, P. Kikani¹, P. K. Pujari³, and S. Deshpande¹

¹*Institute for Plasma Research (IPR), Bhat, Gandhinagar, India*

²*International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India*

³*Bhabha Atomic Research Centre (BARC), Mumbai, India*

⁴*Indira Gandhi Center for Atomic Research (IGCAR), Kalpakkam, Tamil Nadu 603102, India*

⁵*Indian Institute of Technology, Gandhinagar, Gujarat, India*

Corresponding Author: P. Maya, pnmaya@ipr.res.in

Synopsis: via Indico server: IAEA-CN-286-1307

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Repetitive Table-Top Pulsed Plasma Device to Study Materials under Intense Fusion Relevant Pulses

L. Soto¹, D. Zanelli¹, J. Jain¹, C. Pavez¹, J. Moreno¹, G. Avaria¹, B. Bora¹, and S. Davis¹

¹*Comisión Chilena de Energía Nuclear (CCHEN), Casilla 188-D, Santiago, Chile*

Corresponding Author: L. Soto, leopoldo.soto@cchen.cl

Synopsis: via Indico server: IAEA-CN-286-1348

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development of Advanced Dispersion-Strengthened Tungsten Alloys for Divertor Application

H. Noto¹, Y. Hishinuma¹, T. Muroga¹, and H. Benoki²

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Nippon Tungsten Co., Ltd., Fukuoka 812-8538, Japan

Corresponding Author: H. Noto, noto.hiroyuki@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0760

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Development and Testing of an Additively Manufactured Lattice for DEMO Limiters

N. Mantel¹, T. Barrett², D. Bowden¹, K. Flinder¹, M. Fursdon¹, I. Garkusha³, D. Hancock¹, S. Herashchenko⁴, V. Makhlai³, J. Roberts¹, M. Shabani¹, A. von Müller⁵, and J.-H. You⁵

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

³Institute of Plasma Physics, National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

⁴National Science Center, Kharkov Institute of Physics and Technology (KIPT), Kharkov, 61108, Ukraine

⁵Max-Planck-Institut für Plasmaphysik, Garching, 85748 Germany

Corresponding Author: N. Mantel, nicolas.mantel@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-0900

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Nuclear Physical Properties of Austenitic Chromium-Nickel and Chromium-Manganese Steels under Neutron Irradiation in Nuclear Fast Fission and Fusion Reactors

V. Chernov¹, A. Blokhin²

¹*A.A. Bochvar High-Technology Research Institute of Inorganic Materials, "VNIINM", Moscow, Russian Federation*

²*Nuclear Safety Institute (IBRAE RAS), Moscow, 113191, Russian Federation*

Corresponding Author: V. Chernov, vmchernov@bochvar.ru

Synopsis: via Indico server: IAEA-CN-286-1101

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Influence of Radiation and Thermal Effects on the Structure and Properties of Tungsten

A. Miniyazov¹, M. Skakov¹, E. Koyanbayev¹, and I. Sokolov¹

¹*Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan*

Corresponding Author: A. Miniyazov, armanminiyazov@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1115

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Purification of Irradiated Beryllium from Radioactive Nuclides using “Dry” Chlorination Method

I. Sokolov¹, Y. Baklanova¹, and A. Vurim¹

¹*Institute of Atomic Energy, National Nuclear Center, Kurchatov, Kazakhstan*

Corresponding Author: I. Sokolov, sokolov@nnc.kz

Synopsis: via Indico server: IAEA-CN-286-1132

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Failure Rate Assessment of IN-RAFM and SS-304 under Conditions Relevant for Fusion Power Reactors

S. Pillai^{1,2}, P. Chaudhuri², C. Sasmal², M. Rajput², H. K. Patel^{1,2}, and P. Maya²

¹International Thermonuclear Experimental Reactor (ITER), India Centre, Gujarat, India

²Institute for Plasma Research (IPR), Bhat, Gandhinagar, India

Corresponding Author: S. Pillai, suraj.pillai@iter-india.org

Synopsis: via Indico server: IAEA-CN-286-1289

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Tritium Retention in Dust Particles and Divertor Tiles of JET Operated with the ITER-Like Wall

Y. Torikai¹, G. Kikuchi¹, S. Masuzaki², T. Otsuka³, N. Ashikawa², M. Yajima²,
M. Tokitani², Y. Oya⁴, Y. Hatano⁵, N. Asakura⁶, T. Hayashi⁶, M. Oyaidzu⁶,
A. Widdowson⁷, and M. Rubel⁸

The Jet Contributors

¹*Ibaraki University, Mito, Ibaraki, Japan*

²*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

³*Kindai University, Higashiosaka, Osaka, Japan*

⁴*Shizuoka University, Shizuoka, Japan*

⁵*Hydrogen Isotope Research Center, University of Toyama, Toyama, Japan*

⁶*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

⁷*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁸*KTH Royal Institute of Technology, Stockholm, Sweden*

Corresponding Author: Y. Torikai, yuji.torikai.sci@vc.ibaraki.ac.jp

Synopsis: via Indico server: [IAEA-CN-286-0839](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Ammonia Production, Isotopic Exchange and Sticking on Materials Relevant to Fusion Reactors: Tungsten and 316L Stainless Steel

R. Bisson¹, M. Minissale¹, A. Dunand¹, F. Ghiorghiu¹, T. Aissou¹, T. Angot¹, and G. De Temmerman²

¹*Physique des Interactions Ioniques et Moléculaires (PIIM), CNRS, Aix-Marseille Université, F-13013 Marseille, France*

²*International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France*

Corresponding Author: R. Bisson, regis.bisson@univ-amu.fr

Synopsis: via Indico server: IAEA-CN-286-0967

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improved Fusion Plasma Performance in Fusion Devices Enabled by a New Impurity Powder Injection System

R. Maingi¹, A. Bortolon¹, E. Gilson¹, R. Lunsford¹, A. Nagy¹, Z. Sun¹, T. Abrams², A. Diallo¹, X. Gong³, S.-H. Hong⁴, J. Hu³, H. Lee⁴, D. Mansfield¹, M. Umansky⁵, X. Wei⁶, S.-W. Yoon⁴, and L. Zhang³

¹Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

²General Atomics, San Diego, CA 92186, USA

³Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, People's Republic of China

⁴National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

⁵Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

⁶Shenzhen University, Shenzhen, Guangdong Province, People's Republic of China

Corresponding Author: R. Maingi, rmaingi@pppl.gov

Synopsis: via Indico server: IAEA-CN-286-0705

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

LIBS for Monitoring of Tritium and Impurities in the First Wall of Fusion Devices

H. J. van der Meiden¹, S. Almaviva², J. Butikova³, P. Gasior⁴, A. Hakola⁵, I. Jogi⁶,
G. Sergienko⁷, P. Veis⁸, and S. Brezinsek⁷

¹*Dutch Institute for Fundamental Energy Research (DIFFER), 5600 HH Eindhoven, The Netherlands*

²*FSN-TECFIS-DIM, ENEA, Frascati-Rome, Italy*

³*Institute of Solid State Physics, University of Latvia, Riga, LV 1004, Latvia*

⁴*Institute of Plasma Physics and Laser Microfusion (IPPLM), Warsaw, Poland*

⁵*VTT Technical Research Centre of Finland Ltd., Espoo, Finland*

⁶*University of Tartu, Tartu, Estonia*

⁷*Institute of Energy and Climate Research (IEK), Forschungszentrum Jülich GmbH, Jülich, Germany*

⁸*Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Bratislava, Slovakia*

Corresponding Author: H. J. van der Meiden, h.j.vandermeiden@differr.nl

Synopsis: via Indico server: IAEA-CN-286-0979

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Exploitation of Infrared Thermography for WEST Plasma Facing Components Protection During 2019 Campaign

X. Courtois¹, M. Houry¹, M.-H. Aumeunier¹, C. Balorin¹, R. Mitteau¹, P. Moreau¹, and C. Pocheau¹

The WEST (Tore Supra) Team

¹*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM),
Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

Corresponding Author: X. Courtois, xavier.courtois@cea.fr

Synopsis: via Indico server: IAEA-CN-286-1150

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Reduced Deuterium Trapping by Plasma-Implanted He Nanobubbles in Radiation Damaged Tungsten

Q. Bai¹, P. Zheng¹, M. Xu¹, G. Tynan², M. Simmonds², R. Doerner², C. Xu³, J. Zhu³, and E. Fu³

¹*Southwestern Institute of Physics, Chengdu, Sichuan, People's Republic of China*

²*University of California San Diego, CA 92093, USA*

³*Peking University, Haidian, Beijing, People's Republic of China*

Corresponding Author: Q. Bai, baiquan@swip.ac.cn

Synopsis: via Indico server: IAEA-CN-286-1243

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Conceptual Design of the Helical Volumetric Neutron Source FFHR-B2

J. Miyazawa¹, T. Goto¹, Y. Hamaji¹, S. Matsunaga², T. Murase¹, Y. Narushima¹,
S. Nakagawa¹, T. Ohgo², H. Ohtani¹, Y. Onodera¹, R. Seki¹, H. Tamura¹, M. Kobayashi¹,
T. Tanaka¹, and N. Yanagi¹

¹*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

²*Department of Fusion Science, Graduate University for Advanced Studies (SOKENDAI), Toki, Gifu, Japan*

Corresponding Author: J. Miyazawa, miyazawa.junichi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0717

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Feasibility Study of Tokamak, Helical and Laser Reactors as Affordable Fusion Volumetric Neutron Sources

T. Goto¹, T. Tanaka¹, H. Tamura¹, J. Miyazawa¹, N. Yanagi¹, T. Fujita², R. Kodama³,
A. Iwamoto¹, and Y. Mori⁴

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Nagoya University, Nagoya, Japan

³Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan

⁴Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan

Corresponding Author: T. Goto, goto.takuya@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0722

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Conceptual Design of Advanced Fusion Neutron Source (A-FNS)

S. Sato¹, A. Kasugai¹, K. Ochiai¹, K. Masuda¹, M. Nakamura¹, M. Ohta¹, M. Oyaidzu¹,
S. Kwon¹, K. Sakamoto¹, and S. Ishida¹

¹*National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan*

Corresponding Author: S. Sato, sato.satoshi@qst.go.jp

Synopsis: via Indico server: IAEA-CN-286-0723

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Neutron Production Measurement in the 125 MA 5 MeV Deuteron Beam Commissioning of Linear IFMIF Prototype Accelerator (LIPAc) RFQ

K. Kondo¹, T. Akagi¹, L. Bellan², P. Cara³, Y. Carin⁴, M. Comunian², H. Dzitko⁴, E. Fagotti², D. Gex⁴, F. Grespan², D. Jiménez⁵, A. Kasugai¹, K. Kumagai¹, S. Kwon¹, K. Masuda¹, I. Moya⁴, A. Palmieri², A. Pisent², I. Podadera⁵, A. Rodriguez⁶, K. Sakamoto¹, F. Scantamburlo², Y. Shimosaki¹, T. Shinya¹, and M. Sugimoto¹

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro (LNL), Legnaro, Italy

³International Fusion Materials Irradiation Facility (IFMIF/EVEDA), Rokkasho, Aomori, Japan

⁴F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

⁵Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁶ESS Bilbao, 48160 Derio, Bizkaia, Spain

Corresponding Author: K. Kondo, kondo.keitaro@jaea.go.jp

Synopsis: via Indico server: IAEA-CN-286-0823

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Tokamak with Reactor Technologies Concept

S. Konovalov¹, E. Bondarchuk², A. Krasilnikov³, I. Rodin², R. Khairutdinov¹,
V. E. Lukash¹, V. Leonov¹, A. Kukushkin¹, I. Lyublinski⁴, I. Mazul², A. Mineev²,
A. Vertkov⁴, V. Vysotsky⁵, S. Lelekhov³, and V. Sytnikov⁶

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²D. V. Efremov Institute of Electrophysical Apparatus (JSC–NIEFA), St. Petersburg, Russian Federation

³International Thermonuclear Experimental Reactor (ITER),

Project Centre "ITER", Moscow, Russian Federation

⁴JSC "Red Star", Moscow, Russian Federation

⁵Russian Scientific R&D Cable Institute, Russian Federation

⁶R&D Center FGC UES', Federal Grid Company of Unified Energy System JSC, Russian Federation

Corresponding Author: S. Konovalov, konovalov.san@gmail.com

Synopsis: via Indico server: IAEA–CN–286–1157

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Commissioning of Linear IFMIF Prototype Accelerator (LIPAc) RFQ and RF System towards High Current and High Duty Operation

T. Shinya¹, T. Akagi¹, L. Antoniazzi², L. Bellan², P. Cara³, F. Cismondi⁴, M. Comunian², H. Dzitko⁴, T. Ebisawa¹, E. Fagotti², D. Gex⁴, F. Grespan², K. Hayashi¹, Y. Hirata¹, A. Jokinen⁴, A. Kasugai¹, H. Kobayashi⁵, K. Kondo¹, N. Kubo¹, S. Maebara¹, A. Marchena⁶, P. Mendez⁷, J. Molla⁷, M. Montis², C. de la Morena⁷, I. Moya⁴, A. Palmieri², A. Pisent², D. Regidor⁷, K. Sakamoto¹, F. Scantamburlo², Y. Shimosaki¹, M. Sugimoto¹, K. Takayama⁵, J.-F. Thomsen⁸, and M. Weber⁷

¹National Institutes for Quantum and Radiological Science and Technology (QST), Chiba-shi, Japan

²Istituto Nazionale di Fisica Nucleare (INFN), Laboratori Nazionali di Legnaro (LNL), Legnaro, Italy

³International Fusion Materials Irradiation Facility (IFMIF/EVEDA), Rokkasho, Aomori, Japan

⁴F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain

⁵High Energy Accelerator Research Organization (KEK), Tsukuba, Ibaraki, Japan

⁶EUROfusion Consortium, 85748 Garching, Germany

⁷Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Madrid, Spain

⁸Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France

Corresponding Author: T. Shinya, shinya@fusion.k.u-tokyo.ac.jp

Synopsis: via Indico server: [IAEA-CN-286-0830](#)

via the [Fusion Portal](#) 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Tritium Production in Activated IFMIF-DONES HFTM

A. Tidikas¹, G. Stankunas¹

¹*Lithuanian Energy Institute, Laboratory of Nuclear Installation Safety,
Breslaujos str. 3, LT-44403 Kaunas, Lithuania*

Corresponding Author: A. Tidikas, andrius.tidikas@lei.lt

Synopsis: via Indico server: IAEA-CN-286-0848

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Assessment of Radiation Damage of the First Wall of a Fusion Neutron Source DEMO-FNS with a Blanket for Transmutation of Minor Actinides

A. Zhirkin¹, A. Goltsev², A. Komov², A. Dedov², B. V. Kuteev¹, I. Lanie¹, and V. Budaev²

¹National Research Centre "Kurchatov Institute", Moscow, Russian Federation

²National Research University "Moscow Power Engineering Institute",
Krasnokazarmennaya 14, Moscow, Russian Federation

Corresponding Author: A. Zhirkin, zhirkin_av@nrcki.ru

Synopsis: via Indico server: IAEA-CN-286-0974

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Human Resource Development and Network for Fusion Research in Thailand and ASEAN

S. Dangtip¹, T. Onjun¹, and N. Poolyarat¹

The CPAF Collaboration

¹*Thailand Institute of Nuclear Technology, Bangkok, Thailand*

Corresponding Author: S. Dangtip, somsakd@tint.or.th

Synopsis: via Indico server: IAEA-CN-286-1069

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

A Dynamic Simulation Analysis of the Economic Effects of Fusion Energy in the Future Korean Energy Market

S. Kwon¹, H. Chang¹, and H. Chung¹

¹*National Fusion Research Institute (NFRI), Daejeon, Republic of Korea*

Corresponding Author: S. Kwon, kwonsw@nfri.re.kr

Synopsis: via Indico server: IAEA-CN-286-1114

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Design of the Magnetic System of Pakistan Spherical Tokamak (PST) for Steady State Operation

Z. Ahmad¹, K. Ahmad¹, M. Bilal¹, M. T. Saleem¹, and S. Hussain¹

¹*National Tokamak Fusion Program (NTFP), Islamabad, Pakistan*

Corresponding Author: Z. Ahmad, zahoor_a@yahoo.com

Synopsis: via Indico server: IAEA-CN-286-1346

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Fusion Energy: Prospects to the Future

J. C. Fiel¹

¹*Instituto Militar de Engenharia (IME), Rio de Janeiro, RJ, Brazil*

Corresponding Author: J. C. Fiel, joaoclaudiof@gmail.com

Synopsis: via Indico server: IAEA-CN-286-1227

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

IFE: Inertial Fusion Energy

Fast Ignition Laser Fusion Energy Research in Japan

R. Kodama¹

¹*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

Corresponding Author: R. Kodama, ile-director@ile.osaka-u.ac.jp

See also Poster IFE/1-1: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0879

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Tripling the Energy Coupling Efficiency from Hohlraum to Capsule on NIF

Y. Ping¹, V. Smalyuk¹, P. Amendt¹, S. Khan¹, R. Tommasini¹, D. Bennet¹, E. Dewald¹, J. Field¹, F. Graziani¹, E. Hartouni¹, S. Johnson¹, O. Landen¹, J. Lindl¹, A. G. MacPhee¹, A. Nikroo¹, S. Prisbrey¹, J. Ralph¹, R. Seugling¹, D. Strozzi¹, R. Tipton¹, Y. Wang¹, Y. Kim², E. Loomis², K. Meaney², E. Merritt², D. Montgomery², N. Kabadi³, B. Lahmann³, and R. Petrasso³

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

³Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA

Corresponding Author: Y. Ping, ping2@llnl.gov

See also Poster IFE/1-2: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1190

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Core Key Technologies of Multi-Kilojoule Repeatable Laser System

J. Kawanaka¹, S. Tokita¹, J. Ogino¹, H. Yoshida¹, K. Tsubakimoto¹, K. Fujioka¹, Z. Li¹, S. Motokoshi², N. Morio¹, S. Matsuo¹, K. Kawabata¹, K. Takahashi¹, K. Matsumoto¹, Y. Kawakami¹, K. Sawai¹, K. Tsuji¹, M. Ishida¹, K. Matsushita¹, Y. Hirose¹, K. Fuwa¹, K. Shigemori¹, H. Matsuo¹, S. Oketani¹, T. Sezaki¹, T. Yanagida¹, N. Miyanaga², M. Fujita², K.-I. Ueda³, and R. Kodama¹

¹*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

²*Institute for Laser Technology, Suita, Osaka, Japan*

³*Institute for Laser Science (ILS), University of Electro-Communications (UEC), Tokyo 182-8585, Japan*

Corresponding Author: J. Kawanaka, kawanaka@ile.osaka-u.ac.jp

See also Poster IFE/1-3: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0816

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improving Implosion Energy Coupling at the NIF

A. Zylstra¹, A. Kritcher¹, O. Hurricane¹, D. Callahan¹, D. Casey¹, B. Bachmann¹, K. Baker¹, L. Berzak Hopkins¹, R. Bionta¹, T. Braun¹, D. Clark¹, E. Dewald¹, L. Divol¹, T. Döppner¹, V. Geppert Kleinrath², D. Hinkel¹, M. Hohenberger¹, C. Kong³, S. Khan¹, O. Landen¹, S. Le Pape¹, B. A. MacGowan¹, D. Mariscal¹, K. Meaney², A. Nikroo¹, A. Pak¹, P. Patel¹, L. Pickworth¹, J. Ralph¹, N. Rice³, H. Robey¹, S. Ross¹, D. Schlossberg¹, M. Stadermann¹, D. Strozzi¹, C. Thomas¹, R. Tommasini¹, R. Town¹, P. Volegov², C. Weber¹, C. Wild⁴, C. Wilde², M. Herrmann¹, and J. Edwards¹

¹Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

²Los Alamos National Laboratory (LANL), Los Alamos, NM 87545, USA

³General Atomics, San Diego, CA 92186, USA

⁴Diamond Materials GmbH, 79108 Freiburg, Germany

Corresponding Author: A. Zylstra, zylstra1@llnl.gov

See also Poster IFE/1-4: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-1000

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Density Incrustation at Au-Ch Interface

C. Bhattacharya¹, M. Das¹

¹*Bhabha Atomic Research Centre (BARC), Mumbai, India*

Corresponding Author: C. Bhattacharya, bchandra@barc.gov.in

Synopsis: via Indico server: IAEA-CN-286-0620

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Electron Ion Inverse Bremsstrahlung Absorption in Laser Fusion Magnetized Plasma

A. Sid¹, A. Ghezal², and O. Boultif¹

¹LRPRIM laboratory, University of Batna 1, Batna 05000, Algeria

²Commissariat à l'Energie Atomique (COMENA), BP 399 Alger Gare, Algeria

Corresponding Author: A. Sid, abdelaziz.sid@univ-batna.dz

Synopsis: via Indico server: IAEA-CN-286-0618

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Investigating Magnetic Reconnection in ICF Conditions

J. Fuchs¹, R. Smets², S. Bolanos³, R. Riquier⁴, and A. Grisollet⁴

¹*Centre national de la recherche scientifique (CNRS), 75016 Paris, France*

²*Laboratoire de Physique des Plasmas (LPP), CNRS/École Polytechnique, 91128 Palaiseau, France*

³*Laboratoire pour l'Utilisation des Lasers Intenses (LULI), École Polytechnique, 91128 Palaiseau, France*

⁴*Commissariat à l'énergie atomique (CEA), 91400 Gif-sur-Yvette, France*

Corresponding Author: J. Fuchs, julien.fuchs@polytechnique.fr

Synopsis: via Indico server: IAEA-CN-286-1353

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Preprint: Available following the Conference

Poster: Available following the Conference

Simulation of Direct-Drive Targets for Megajoule Laser Facilities with Account for Nonlocal Electron Transport, Fast Electron Generation and Stimulated Scattering of Laser Radiation

N. Karlykhanov¹, I. Khimich¹, and V. Lykov¹

¹*“Russian Federal Nuclear Center–Academician E.I. Zababakhin All-Russian Research Institute of Technical Physics” (FSUE “RFNC-VNIITF”), Snezhinsk, Chelyabinsk region, Russian Federation*

Corresponding Author: N. Karlykhanov, n.g.karlykhanov@vniitf.ru

Synopsis: via Indico server: IAEA–CN–286–1135

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Statistically Informed Physics Understanding and Design Optimization of Direct-Drive Inertial Confinement Fusion Experiments

V. Gopaldaswamy¹, R. Betti¹, J. Knauer¹, A. Lees¹, D. Patel¹, and K. M. Woo¹

¹Laboratory for Laser Energetics, University of Rochester, Rochester, NY 14623, USA

Corresponding Author: V. Gopaldaswamy, vgop@lle.rochester.edu

Synopsis: via Indico server: IAEA-CN-286-0942

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Thermonuclear Ignition and the Onset of Propagating Burn in Inertial Fusion Implosions

A. Christopherson¹, D. Cao², G. Varchas², O. Mannion², R. Betti², and S. Miller²

¹*Fusion Science Center, 250 E River Rd, Rochester, NY, USA*

²*Laboratory for Laser Energetics, University of Rochester, Rochester, NY 14623, USA*

Corresponding Author: A. Christopherson, alisonchristopherson@gmail.com

Synopsis: via Indico server: IAEA-CN-286-0992

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Efficient Fast Isochoric Heating Process Visualized with Spatial-Temporal-Resolved X-Ray Imaging

S. Fujioka¹, R. Takizawa¹, M. Takemura¹, Y. Abe¹, B. Zhu¹, G. Shuwang¹, H. Morita¹, K. Matsuo¹, K. F. F. Law¹, J. Dun¹, T. Johzaki², H. Sawada³, N. Higashi¹, A. Morace¹, A. Yogo¹, N. Iwata¹, T. Sano⁴, A. Sunahara⁵, H. Sakagami⁶, T. Ozaki⁶, K. Mima⁷, K. Yamanoi¹, K. Tsubakimoto¹, S. Tokita¹, Y. Nakata¹, J. Kawanaka¹, M. Nakai¹, H. Shiraga¹, H. Nagatomo⁴, H. Azechi¹, Y. Arikawa¹, Y. Sentoku¹, and R. Kodama¹

¹*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

²*Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, Japan*

³*Department of Physics, University of Nevada, Reno, NV 89557, USA*

⁴*Osaka University, Osaka, Japan*

⁵*Center for Materials Under eXtreme Environments (CMUXE),
Purdue University, West Lafayette, IN 47907, USA*

⁶*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁷*Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan*

Corresponding Author: S. Fujioka, sfujioka@ile.osaka-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0874

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Efficient Plasma Heating by Kilojoule Petawatt Lasers with a Lateral Confinement of Fast Electrons

N. Iwata¹, A. Kemp², S. Wilks², K. Mima³, and Y. Sentoku¹

¹*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

²*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

³*Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan*

Corresponding Author: N. Iwata, iwata-n@ile.osaka-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0786

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Improvement of Ignition and Burning Target Design for Fast Ignition Scheme

H. Nagatomo¹, T. Johzaki², M. Hata¹, H. Sakagami³, Y. Sentoku⁴, S. Fujioka⁴, and K. Mima⁵

¹*Osaka University, Osaka, Japan*

²*Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, Japan*

³*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁴*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

⁵*Graduate School for the Creation of New Photonics Industries, Hamamatsu, Shizuoka, Japan*

Corresponding Author: H. Nagatomo, naga@ile.osaka-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0728

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Theoretical Scaling of Fast Isochoric Heating for Laser Fusion

N. Higashi¹, N. Iwata², T. Sano¹, K. Mima³, and Y. Sentoku²

¹*Osaka University, Osaka, Japan*

²*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

³*Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan*

Corresponding Author: N. Higashi, higashi-n@ile.osaka-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0875

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

An Alternative Fast Ignition Scheme by Standing Whistler-Wave Heating

T. Sano¹, S. Fujioka¹, Y. Mori², K. Mima², Y. Sentoku¹, and R. Kodama¹

¹*Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan*

²*Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan*

Corresponding Author: T. Sano, sano@ile.osaka-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0747

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Hot Electron and Ion Spectra on the Blow-Off Plasma Free Target in the GXII-LFEX Direct Fast Ignition Experiment

T. Ozaki¹, Y. Abe², Y. Arikawa², N. Higashi², E. Miura², S. Okihira², K. Ishii², R. Hanayama², A. Iwamoto², H. Sakagami¹, O. Komeda³, T. Johzaki², J. Kawanaka², S. Tokita², N. Miyanaga², T. Jitsuno², Y. Natata², K. Tsubakimoto², H. Shiraga², Y. Kitagawa⁴, Y. Mori⁴, A. Sunahara⁵, and Y. Sentoku²

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan

³TOYOTA Motor Corporation, Japan

⁴Graduate School for the Creation of New Photonics Industries, Hamamatsu, Shizuoka, Japan

⁵Center for Materials Under eXtreme Environments (CMUXE), Purdue University, West Lafayette, IN 47907, USA

Corresponding Author: T. Ozaki, ozaki@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0834

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Demonstration of Direct Fast Heating of Counter-Imploded Core Plasma by LFX Laser

Y. Kitagawa¹, Y. Mori¹, K. Ishii¹, R. Hanayama¹, S.-I. Okihara¹, O. Komeda², H. Suto², Y. Umetani², H. Hirata², T. Motohiro³, T. Hioki³, H. Azuma⁴, A. Sunahara⁵, Y. Sentoku⁶, Y. Arikawa⁶, Y. Abe⁶, N. Nakajima⁶, S. Sakata⁶, K. Matsuo⁶, S. Fujioka⁶, H. Sakagami⁷, A. Iwamoto⁷, T. Ozaki⁷, E. Miura⁸, T. Johzaki⁹, R. Mirfayzi⁶, J. Kawanaka⁶, S. Tokita⁶, N. Miyanaga⁶, T. Jitsuno⁶, Y. Nakata⁶, and K. Tsubakimoto⁶

¹Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan

²TOYOTA Motor Corporation, Japan

³Institute of Innovation for Future Society, Nagoya University, Nagoya, Japan

⁴Aichi Synchrotron Radiation Center, Seto-shi, Aichi-ken, 489-0965 Japan

⁵Center for Materials Under eXtreme Environments (CMUXE),
Purdue University, West Lafayette, IN 47907, USA

⁶Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan

⁷National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁸National Institute of Advanced Industrial Science and Technology (AIST), Tokyo, Japan

⁹Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, Japan

Corresponding Author: Y. Kitagawa, kitagawa@gpi.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0784

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Progresses of Inertial Fusion Energy Program at GPI Hamamatsu toward Mini-Reactor Candy

Y. Mori¹, K. Ishii¹, R. Hanayama¹, S.-I. Okihara¹, Y. Kitagawa¹, O. Komeda², E. Miura³, A. Iwamoto⁴, T. Ozaki⁴, H. Sakagami⁴, T. Johzaki⁵, Y. Sentoku⁶, Y. Arikawa⁶, Y. Abe⁶, N. Nakajima⁶, M. Reza⁶, S. Sakata⁶, K. Matsuo⁶, and S. Fujioka⁶

¹Graduate School for the Creation of New Photonics Industries,
Hamamatsu, Shizuoka, Japan

²TOYOTA Motor Corporation, Japan

³National Institute of Advanced Industrial Science and Technology (AIST), Tokyo, Japan

⁴National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

⁵Graduate School of Engineering, Hiroshima University, Higashi-Hiroshima, Japan

⁶Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan

Corresponding Author: Y. Mori, ymori@gpi.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0893

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Conceptual Design of Laser Fusion Subcritical Research Reactor with J-EPOCH Facility for Fusion Engineering Researches

A. Iwamoto¹, R. Kodama²

¹National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

²Institute of Laser Engineering (ILE), Osaka University, Osaka, Japan

Corresponding Author: A. Iwamoto, iwamoto.akifumi@nifs.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0729

via the Fusion Portal 

Poster: Available following the Conference

Why We Need Integral Concepts to Reach the Challenges in Physics of IFE Reaction Chamber

J. M. Perlado¹, J. Catalán², M. Cotelo¹, R. Gonzalez-Arrabal¹, R. Juarez¹, F. Ogando¹, E. Oliva¹, O. Peña-Rodriguez¹, A. Rivera¹, J. Sanz¹, P. Sauvan¹, and P. Velarde¹

¹*The Institute of Nuclear Fusion (IFN) "Guillermo Velarde",
Universidad Politécnica de Madrid (UPM), Madrid, Spain*

²*National University of Distance Education (UNED), 28040 Madrid, Spain*

Corresponding Author: J. M. Perlado, josemanuel.perlado@upm.es

Synopsis: via Indico server: IAEA-CN-286-1365

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

IAC: Innovative and Alternative Fusion Concepts

Overview of C-2W: High Temperature, Steady-State Beam-Driven Field-Reversed Configuration Plasmas

H. Gota¹, M. Binderbauer¹, T. Tajima^{1,2}, A. Smirnov¹, S. Putvinski¹, M. Tuszewski¹, S. Dettrick¹, D. Gupta¹, S. Korepanov¹, R. Magee¹, J. Park¹, T. Roche¹, J. Romero¹, E. Trask¹, X. Yang¹, P. Yushmanov¹, K. Zhai¹, L. Schmitz^{1,3}, Z. Lin², A. Ivanov⁴, T. Asai⁵, T. Baltz⁶, and J. Platt⁶

¹TAE Technologies, Inc., Foothill Ranch, CA 92688, USA

²University of California Irvine, CA 92697, USA

³University of California Los Angeles, CA 90095, USA

⁴Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation

⁵Nihon University, Tokyo, Japan

⁶Google

Corresponding Author: H. Gota, hgota@tae.com

See also Poster IAC/1-1: P4 Wednesday

Synopsis: via Indico server: IAEA-CN-286-0749

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Supersonic/Alfvénic Collision and Merging of Field-Reversed Configuration Plasmas

T. Asai¹, D. Kobayashi¹, N. Sahara¹, J. Sekiguchi¹, T. Takahashi¹, M. Nagata¹, Y. Nagayama¹, S. Okada¹, K. Iwamoto¹, H. Gota², R. Magee², T. Roche², S. Dettrick², Y. Mok², M. Tuszewski², M. Binderbauer², T. Tajima^{2,3}, T. Matsumoto², M. Inomoto⁴, N. Mizuguchi⁵, and T. Takahashi⁶

¹*Nihon University, Tokyo, Japan*

²*TAE Technologies, Inc., Foothill Ranch, CA 92688, USA*

³*University of California Irvine, CA 92697, USA*

⁴*University of Tokyo, Tokyo, Japan*

⁵*National Institute for Fusion Science (NIFS), Toki, Gifu, Japan*

⁶*Gunma University, Maebashi, Gunma, Japan*

Corresponding Author: T. Asai, asai.tomohiko@nihon-u.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0868

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Overview of Merging Spherical Tokamak Experiments and Simulations for Burning, High- β and/or Absolute Minimum- B Plasma Formation

Y. Ono¹, M. Inomoto¹, H. Tanabe¹, H. Yamaguchi¹, M. Akimitsu², M. Gryaznevich³, S. McNamara³, P. Buxton², J. Kompulla², J. Wood², V. Nemytov², K. McClements⁴, C.-Z. Cheng⁵, S. Usami⁶, and R. Horiuchi⁶

¹University of Tokyo, Tokyo, Japan

²Graduate School of Frontier Science, University of Tokyo, Tokyo, Japan

³Tokamak Energy Ltd, Abingdon, UK

⁴Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

⁵Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA

⁶National Institute for Fusion Science (NIFS), Toki, Gifu, Japan

Corresponding Author: Y. Ono, ono@k.u-tokyo.ac.jp

Synopsis: via Indico server: IAEA-CN-286-0801

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Status of Activity on GOL-NB Multiple-Mirror Experiment

V. Postupaev¹, V. Batkin¹, A. Burdakov¹, V. Burmasov¹, I. Ivanov¹, K. Kuklin¹, K. Mekler¹,
N. Melnikov¹, A. Nikishin¹, S. Polosatkin¹, A. Rovenskikh¹, E. Sidorov¹, and
D. Skovorodin¹

¹*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

Corresponding Author: V. Postupaev, v.v.postupaev@inp.nsk.su

Synopsis: via Indico server: IAEA-CN-286-0664

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Plasma Flow Suppression in the Open Magnetic Traps by the Helical Mirror

A. Sudnikov¹, A. Beklemishev¹, A. Burdakov¹, I. Ivanov¹, A. Inzhevatkina¹,
V. Postupaev¹, V. Sklyarov¹, and V. Ustyuzhanin²

¹*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

²*Novosibirsk State University, Novosibirsk, Russian Federation*

Corresponding Author: A. Sudnikov, a.v.sudnikov@inp.nsk.su

Synopsis: via Indico server: IAEA-CN-286-1109

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Time Correlation Between Low-Energy, High-Energy X-Rays and Neutron Emission in Plasma Focus in the Context of Nuclear Fusion Mechanisms

J. Jain¹, J. Moreno¹, S. Davis¹, B. Bora¹, G. Avaria¹, C. Pavez¹, and L. Soto¹

¹*Comisión Chilena de Energía Nuclear (CCHEN), Casilla 188-D, Santiago, Chile*

Corresponding Author: J. Jain, jalaj.jain@cchen.cl

Synopsis: via Indico server: IAEA-CN-286-1209

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

The Gas-Dynamic Multimirror Trap Project

D. Yakovlev¹, P. Bagryansky¹, A. Beklemishev¹, A. Burdakov¹, I. Chernoshtanov¹,
A. Ivanov¹, M. Khristo¹, I. Kotelnikov¹, S. Polosatkin¹, V. Postupaev¹, V. Prikhodko¹,
V. Savkin¹, D. Skovorodin¹, E. Soldatkina¹, A. Solomakhin¹, A. Molodyk^{2,3},
V. Scherbakov³, S. Samoilenkov³, and A. Vavilov³

¹*Budker Institute of Nuclear Physics (BINP), Novosibirsk, Russian Federation*

²*S-Innovations, 117246 Moscow, Russian Federation*

³*SuperOx, 117246 Moscow, Russian Federation*

Corresponding Author: D. Yakovlev, d.v.yakovlev@inp.nsk.su

Synopsis: via Indico server: IAEA-CN-286-1280

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Publication: Maintained at Nuclear Fusion 

Sheared-Flow-Stabilized Z Pinch as a Compact Fusion Device

U. Shumlak¹, H. McLean², B. Nelson³, D. Higginson², E. Claveau¹, E. Forbes¹, A. Khairi¹,
E. Meier¹, J. Mitrani², C. Parsons¹, A. Stepanov¹, K. Tummel², T. Weber¹, and Y. Zhang³

¹University of Washington, Seattle, WA 98195, USA

²Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA

³Zap Energy Inc., Seattle, WA 98104, USA

Corresponding Author: U. Shumlak, shumlak@uw.edu

Synopsis: via Indico server: IAEA-CN-286-0952

via the Fusion Portal



Preprint: Available following the Conference

Poster: Available following the Conference

Synopsis on the Unified Field Theory

G. L. Ziegler¹

¹*Electrino Group, Inc., Lacey, WA 98503, USA*

Corresponding Author: G. L. Ziegler, ben_ent100@man.com

Synopsis: via Indico server: IAEA-CN-286-1232

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

Pulsed Power Technology for Driving Low Energy Plasma Focus Device

G. Elaragi¹

¹*Egyptian Atomic Energy Authority (EAEA), Cairo, Egypt*

Corresponding Author: G. Elaragi, elaragi@gmail.com

Synopsis: via Indico server: [IAEA-CN-286-0621](#)

via the Fusion Portal 

Preprint: Available following the Conference

Poster: Available following the Conference

PD: Post-Deadline Contributions

Contributions exceptionally accepted post-deadline.

Multi-Machine Determination of SOL-to-Core Multi-Z Impurity Transport in Advanced Confinement Regimes

N. Howard¹, T. Abrams², F. Scotti³, B. Grierson⁴, A. Jarvinen³, T. Odstrcil², F. Sciortino⁵, W. Guttenfelder⁴, B. Victor³, S. Haskey⁴, J. Nichols⁶, S. Zamperini⁶, A. Bortolon⁴, and F. Effenberg⁴

¹*Plasma Science & Fusion Center, MIT, Cambridge, MA 02139, USA*

²*General Atomics, San Diego, CA 92186, USA*

³*Lawrence Livermore National Laboratory (LLNL), Livermore, CA 94550, USA*

⁴*Princeton Plasma Physics Laboratory (PPPL), Princeton, NJ 08540, USA*

⁵*Massachusetts Institute of Technology (MIT), Cambridge, MA 02139, USA*

⁶*University of Tennessee, Knoxville, TN 37996, USA*

Corresponding Author: N. Howard, nthoward@psfc.mit.edu

See also Poster PD/1-1: P8 Friday

Synopsis: via Indico server: IAEA-CN-286-1532

via the Fusion Portal 

Preprint: Available following the Conference

Manufacturing Completion of the First ITER Vacuum Vessel Sector

H. Kim¹, C. Park¹, H. Moon¹, Y. Jung¹, M. Ha¹, S. Park¹, Y. Joo¹, J. Joo¹, S. Kang¹, Y. Seo¹, J. Han¹, N. Her¹, N. Lim¹, B. Yoon¹, H. Kim¹, S. Choi¹, J. Jung¹, H. Hwang¹, J. Yang¹, K. Hong¹, Y. Lee¹, B. Kim¹, H. Ahn¹, H. Lee¹, K. Jung¹, C. Choi², J. Sa², H. Kim², Y. Kim², W. Chung², G. Kim², Y. Hong², J.-M. Martinez², A. Martin², J. Juntao², M. Privalov², B. Xiang², F. Lobinger², N. Pedrosa², E. Rodilla², Y. Utin², A. Mestric², Y. Jung², J. Yeung Wai Tok², S. Son³, D. Kim⁴, K. Park⁵, H. Kim⁵, S. Seok⁵, D. Park⁵, T. Kim⁵, G. Moon⁵, J. Lee⁵, K. Lim⁵, J. Kim⁵, H. Yeo⁵, H. Kim⁵, J. Kim⁵, J. Lee⁵, M. Kim⁵, Y. Kim⁵, T. Park⁵, J. Kim⁶, I. Jin⁶, J. Lee⁶, Y. Jung⁷, J. Cha⁷, M. Park⁷, and J. Kim⁷

¹National Fusion Research Institute (NFRI), Daejeon, Republic of Korea

²International Thermonuclear Experimental Reactor (ITER) Organization

³Bureau Veritas, Republic of Korea

⁴SGS Korea Co., Ltd., Republic of Korea

⁵Hyundai Heavy Industries, Ulsan, Republic of Korea

⁶HNE, Republic of Korea

⁷Argus, Republic of Korea

Corresponding Author: H. Kim, hskim@nfri.re.kr

See also Poster PD/1-2: [P8 Friday](#)

Synopsis: via Indico server: [IAEA-CN-286-1533](#)

via the Fusion Portal 

Preprint: Available following the Conference

Target Fabrication Technologies and Noncontact Delivery Systems to Develop a Free-Standing Target Factory Operating in The Repetition Mode at the IFE Relevant Level

I. Aleksandrova¹, **E. Koresheva**¹, and E. Koshelev¹

¹*P. N. Lebedev Physical Institute, RAS, Moscow, Russian Federation*

Corresponding Author: E. Koresheva, koreshevaer@lebedev.ru

Synopsis: via Indico server: IAEA-CN-286-1540

via the Fusion Portal 

Preprint: Available following the Conference

Overview of First Physics Results from MAST Upgrade

J. Harrison^{1,2}

On Behalf of the MAST Upgrade and EUROfusion MST1 teams

¹United Kingdom Atomic Energy Authority, Culham Science Centre, Abingdon, UK

²Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK

Corresponding Author: J. Harrison, james.harrison@ukaea.uk

Synopsis: via Indico server: IAEA-CN-286-1538

via the Fusion Portal 

Preprint: Available following the Conference

Divertor Detachment in ITER during Application of Resonant Magnetic Perturbations for ELM Suppression

H. Frerichs¹, Y. Feng², L. Li³, Y. Liu⁴, A. Loarte⁵, R. Pitts⁵, D. Reiter⁶, and O. Schmitz¹

¹University of Wisconsin-Madison, Madison, WI 53706, USA

²Max-Planck-Institut für Plasmaphysik, Greifswald, 17491 Germany

³Donghua University, Shanghai, People's Republic of China

⁴General Atomics, San Diego, CA 92186, USA

⁵International Thermonuclear Experimental Reactor (ITER), 13108 St. Paul lez Durance, France

⁶Heinrich Heine University, Düsseldorf, Germany

Corresponding Author: H. Frerichs, hfrerichs@wisc.edu

Synopsis: via Indico server: IAEA-CN-286-1537

via the Fusion Portal 

Preprint: Available following the Conference

Predictive Dynamics of Tearing Modes for Plasma Stability in DT and TT Scenarios Considering Jet Baseline and Hybrid Discharges with Mixture of Isotopes

S. Nowak¹, J. Ferreira², P. Huynh³, F. Koechl⁴, A. Merle⁵, O. Sauter⁵, P. Strand⁶, D. Yadykin⁶, E. Alessi¹, P. Buratti⁷, J. Garcia³, E. Giovannozzi⁷, C. Maggi⁴, G. Pucella⁷, and M. Romanelli⁴

The Jet Contributors and EUROfusion MST1 Teams

¹*Istituto per la Scienza e Tecnologia dei Plasmi (ISTP), CNR, 20125 Milan, Italy*

²*ISFN, Instituto Superior Técnico (IST), 1049-001 Lisbon, Portugal*

³*Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), Commissariat à l'énergie atomique (CEA/Cadarache), 13108 St. Paul lez Durance, France*

⁴*Culham Centre for Fusion Energy (CCFE), Culham Science Centre, Abingdon, UK*

⁵*Swiss Plasma Center (SPC), École polytechnique fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland*

⁶*Department of Earth and Space Sciences, Chalmers University of Technology, Göteborg, Sweden*

⁷*ENEA, C. R. Frascati, C.P. 65 00044 Frascati, Rome, Italy*

Corresponding Author: S. Nowak, silvana.nowak@istp.cnr.it

Synopsis: via Indico server: IAEA-CN-286-1541

via the Fusion Portal 

Preprint: Available following the Conference

Benchmarking and Validating SOLPS-ITER, SOLEDGE2D and UEDGE for Power Exhaust Modelling in Future Tokamaks

F. Subba¹, M. Moscheni¹, C. Meineri², M. Wigram³, C. Carati⁴, E. De Marchi¹,
P. Innocente⁵, and R. Zanino¹

¹*Politecnico di Torino, 10129 Torino, Italy*

²*ENEA C. R. Frascati, Dipartimento FSN, via E. Fermi 45, 00044 Frascati, Italy*

³*University of York, Heslington, UK*

⁴*eni SpA, Decarbonization Center, Nuclear Fusion, Italy*

⁵*Consorzio RFX, Associazione EURATOM-ENEA sulla Fusione, Padova, Italy*

Corresponding Author: F. Subba, fabio.subba@gedu.polito.it

Synopsis: via Indico server: IAEA-CN-286-1577

via the Fusion Portal 

Preprint: Available following the Conference

Application of Jade V&V Capabilities to the New FENDL V3.2 Beta Release

D. Laghi^{1,2}, M. Fabbri³, L. Isolan², M. Sumini², G. Schnabel⁴, and A. Trkov⁵

¹*NIER Ingegneria S.p.A., 40013 Castel Maggiore, Bologna, Italy*

²*Industrial Engineering Department, Università di Bologna, 40126 Bologna, Italy*

³*F4E: Fusion for Energy, ITER EU Centre, 08019 Barcelona, Spain*

⁴*International Atomic Energy Agency (IAEA), Vienna, Austria*

⁵*Jožef Stefan Institute, 1000 Ljubljana, Slovenia*

Corresponding Author: D. Laghi, davide.laghi5@unibo.it

Presenting Author: M. Fabbri

Synopsis: via Indico server: IAEA-CN-286-1536

via the Fusion Portal 

Preprint: Available following the Conference

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| TECH/3-1 | 630 | TECH/P5-25 | 691 | TECH/P8-23 | 744 |
| TECH/3-2Ra | 631 | TECH/P5-26 | 692 | TECH/P8-24 | 745 |
| TECH/3-2Rb | 632 | TECH/P5-27 | 693 | TECH/P8-25 | 746 |
| TECH/3-3Ra | 633 | TECH/P5-28 | 694 | TECH/P8-26 | 747 |
| TECH/3-3Rb | 634 | TECH/P5-29 | 695 | TECH/P8-27 | 748 |
| TECH/3-4Ra | 635 | TECH/P5-3 | 670 | TECH/P8-28 | 749 |
| TECH/3-4Rb | 636 | TECH/P5-30 | 696 | TECH/P8-29 | 750 |
| TECH/3-5Ra | 637 | TECH/P5-31 | 697 | TECH/P8-3 | 727 |
| TECH/3-5Rb | 638 | TECH/P5-32 | 698 | TECH/P8-30 | 751 |
| TECH/3-6 | 639 | TECH/P5-34 | 699 | TECH/P8-32 | 752 |
| TECH/4-1 | 640 | TECH/P5-35 | 700 | TECH/P8-4 | 728 |
| TECH/4-2Ra | 641 | TECH/P5-4 | 671 | TECH/P8-6 | 729 |
| TECH/4-2Rb | 642 | TECH/P5-5 | 672 | TECH/P8-7 | 730 |
| TECH/4-3 | 643 | TECH/P5-6 | 673 | TECH/P8-8 | 731 |
| TECH/4-4 | 644 | TECH/P5-7 | 674 | TECH/P8-9 | 732 |
| TECH/4-5 | 645 | TECH/P5-8 | 675 | TH/1-1 | 396 |
| TECH/P3-1 | 646 | TECH/P5-9 | 676 | TH/2-1 | 397 |
| TECH/P3-10 | 654 | TECH/P7-1 | 701 | TH/2-2 | 398 |
| TECH/P3-11 | 655 | TECH/P7-10 | 709 | TH/2-3 | 399 |
| TECH/P3-12 | 656 | TECH/P7-11 | 710 | TH/2-4 | 400 |
| TECH/P3-13 | 657 | TECH/P7-12 | 711 | TH/2-5 | 401 |
| TECH/P3-14 | 658 | TECH/P7-13 | 712 | TH/3-1 | 402 |
| TECH/P3-15 | 659 | TECH/P7-14 | 713 | TH/3-2 | 403 |
| TECH/P3-16 | 660 | TECH/P7-15 | 714 | TH/3-3 | 404 |
| TECH/P3-17 | 661 | TECH/P7-16 | 715 | TH/3-4 | 405 |
| TECH/P3-18 | 662 | TECH/P7-17 | 716 | TH/3-5 | 406 |
| TECH/P3-19 | 663 | TECH/P7-18 | 717 | TH/4-1 | 407 |
| TECH/P3-2 | 647 | TECH/P7-19 | 718 | TH/4-2 | 408 |
| TECH/P3-20 | 664 | TECH/P7-2 | 702 | TH/4-3 | 409 |
| TECH/P3-21 | 665 | TECH/P7-20 | 719 | TH/4-4 | 410 |
| TECH/P3-22 | 666 | TECH/P7-21 | 720 | TH/4-5 | 411 |
| TECH/P3-23 | 667 | TECH/P7-22 | 721 | TH/5-1 | 412 |
| TECH/P3-3 | 648 | TECH/P7-24 | 722 | TH/5-2 | 413 |
| TECH/P3-4 | 649 | TECH/P7-25 | 723 | TH/5-3 | 414 |
| TECH/P3-6 | 650 | TECH/P7-27 | 724 | TH/6-1 | 415 |
| TECH/P3-7 | 651 | TECH/P7-3 | 703 | TH/7-1Ra | 416 |
| TECH/P3-8 | 652 | TECH/P7-4 | 704 | TH/7-1Rb | 417 |
| TECH/P3-9 | 653 | TECH/P7-5 | 705 | TH/7-1Rc | 418 |
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| TECH/P5-11 | 678 | TECH/P7-9 | 708 | TH/7-4 | 421 |
| TECH/P5-12 | 679 | TECH/P8-1 | 725 | TH/7-5 | 422 |
| TECH/P5-13 | 680 | TECH/P8-10 | 733 | TH/P1-1 | 423 |
| TECH/P5-14 | 681 | TECH/P8-11 | 734 | TH/P1-10 | 431 |
| TECH/P5-15 | 682 | TECH/P8-14 | 735 | TH/P1-11 | 432 |

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| TH/P1-13 | 434 | TH/P3-14 | 487 | TH/P5-23 | 542 |
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| TH/P1-15 | 436 | TH/P3-17 | 489 | TH/P5-25 | 544 |
| TH/P1-17 | 437 | TH/P3-18 | 490 | TH/P5-26 | 545 |
| TH/P1-18 | 438 | TH/P3-19 | 491 | TH/P5-27 | 546 |
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| TH/P1-2 | 424 | TH/P3-20 | 492 | TH/P5-4 | 524 |
| TH/P1-20 | 440 | TH/P3-21 | 493 | TH/P5-5 | 525 |
| TH/P1-21 | 441 | TH/P3-22 | 494 | TH/P5-6 | 526 |
| TH/P1-22 | 442 | TH/P3-23 | 495 | TH/P5-7 | 527 |
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| TH/P1-6 | 428 | TH/P4-12 | 510 | TH/P6-22 | 792 |
| TH/P1-8 | 429 | TH/P4-13 | 511 | TH/P6-23 | 793 |
| TH/P1-9 | 430 | TH/P4-15 | 512 | TH/P6-24 | 794 |
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| TH/P2-10 | 460 | TH/P4-17 | 514 | TH/P6-5 | 549 |
| TH/P2-12 | 461 | TH/P4-18 | 515 | TH/P6-6 | 550 |
| TH/P2-13 | 462 | TH/P4-2 | 500 | TH/P6-7 | 551 |
| TH/P2-14 | 463 | TH/P4-21 | 516 | TH/P6-8 | 552 |
| TH/P2-15 | 464 | TH/P4-22 | 517 | TH/P6-9 | 553 |
| TH/P2-16 | 465 | TH/P4-23 | 518 | TH/P7-1 | 562 |
| TH/P2-17 | 466 | TH/P4-24 | 519 | TH/P7-10 | 570 |
| TH/P2-18 | 467 | TH/P4-25 | 520 | TH/P7-11 | 571 |
| TH/P2-19 | 468 | TH/P4-3 | 501 | TH/P7-12 | 572 |
| TH/P2-2 | 452 | TH/P4-4 | 502 | TH/P7-13 | 573 |
| TH/P2-20 | 469 | TH/P4-5 | 503 | TH/P7-14 | 574 |
| TH/P2-21 | 470 | TH/P4-6 | 504 | TH/P7-15 | 575 |
| TH/P2-22 | 471 | TH/P4-7 | 505 | TH/P7-16 | 576 |
| TH/P2-23 | 472 | TH/P4-8 | 506 | TH/P7-17 | 577 |
| TH/P2-24 | 473 | TH/P4-9 | 507 | TH/P7-19 | 578 |
| TH/P2-25 | 474 | TH/P5-1 | 521 | TH/P7-20 | 579 |
| TH/P2-26 | 475 | TH/P5-10 | 530 | TH/P7-21 | 580 |
| TH/P2-27 | 476 | TH/P5-11 | 531 | TH/P7-23 | 581 |
| TH/P2-3 | 453 | TH/P5-12 | 532 | TH/P7-24 | 582 |
| TH/P2-4 | 454 | TH/P5-13 | 533 | TH/P7-25 | 583 |
| TH/P2-5 | 455 | TH/P5-14 | 534 | TH/P7-26 | 584 |
| TH/P2-6 | 456 | TH/P5-15 | 535 | TH/P7-27 | 585 |
| TH/P2-7 | 457 | TH/P5-16 | 536 | TH/P7-28 | 586 |
| TH/P2-8 | 458 | TH/P5-17 | 537 | TH/P7-29 | 587 |
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| TH/P7-7 | 567 | TH/P8-16 | 603 | TH/P8-3 | 592 |
| TH/P7-8 | 568 | TH/P8-17 | 604 | TH/P8-4 | 593 |
| TH/P7-9 | 569 | TH/P8-18 | 605 | TH/P8-5 | 594 |
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| TH/P8-10 | 597 | TH/P8-2 | 591 | TH/P8-8 | 596 |
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| IAEA-CN-286-0639...725 | IAEA-CN-286-0696...301 | IAEA-CN-286-0750...209 |
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