

Longitudinal current and plasma turbulence in the initial plasma of the AMBAL-M device.

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Abstract

Experimental studies of the initial plasma in the end system of AMBAL-M device [1], have shown that during discharge in a plasma source an electron current of approximately 1kA parallel to the magnetic field is a present in a plasma stream. Total current and current density radial profiles have been measured in several cross-section using Rogovski belts and movable magnetic coils inserted into the plasma. Fluctuations of azimuthal and radial magnetic fields and other plasma parameters have been measured too. Analyses of the spectra and radial profiles of the density and magnetic field have shown correlation between these quantities which is most likely connected with the presence of Kelvin-Helmholtz instability in the plasma stream. The dependence between the level of turbulence in the plasma stream and magnitude of longitudinal current have been shown.

1. T.D.Akhmetov, E.B.Bender, V.I.Davydenko, G.I.Dimov, A.A.Kabantsev, V.G.Igoshin, V.B.Reva, V.G.Sokolov, and S.Yu.Taskaev. -In: 23rd European Physical Society Conference on Controlled Fusion and Plasma Physics, Kiev, 1996, Contr. papers, p.c017.