

✓ **TPAH116 Slow Ground Motion Studies with a Hydrostatic Level System at Fermilab and SLAC**

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A series of new ground motion studies using an upgraded hydrostatic level system are planned at Fermilab and SLAC in collaboration with BINP. To better characterize both the spatial and temporal characteristics of slow ground motion, these studies will use large number of probes and will also be performed in several geologically different locations. The hydrostatic system used in previous measurements [1] was limited in accuracy by its sensitivity to temperature fluctuations. This paper presents the improvements to be incorporated into the upgraded hydrostatic level system, present status, and the plan for experimental measurements.

TPAH117 Vibration Measurements for the SPring-8 Storage Ring

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The SPring-8 Storage Ring is the third generation low emittance synchrotron radiation source. The horizontal emittance is 7 nm and the vertical one is less than 7 pm. If there is vibration, the effective emittance becomes large; the effective brightness decreases as the vibration increases. This effect becomes more noticeable as the emittance decreases. Since the vertical emittance of the SPring-8 is very small, we measured the vibration and studied the effect to the electron beam. Vibration was measured along the beam line. Vibration mode was also measured for the two cells that are located nearest and farthest point to the main vibration sources. Taking these measurement results into account evaluation of the effect to the electron beam was made. These measurement and evaluated results are described.

TPAH118 Mechanical Induced Beam Motion in SRRS Storage Ring

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It had been observed that the mechanical stability of some magnets had influences on the closed orbit in the storage ring. In this paper, a mechanical shaker in low vibration level was applied on the quadrupole and sextupole magnet. The transfer function between closed orbit and magnet displacement was measured. The static and dynamic response of magnet supporting structure was discussed. The tentative criteria of mechanical structure in the storage ring was proposed. Finally some examples of mechanical induced beam motion were included.

TPAH119 Shipping and Alignment for the SNS Cryomodule

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The Spallation Neutron Source (SNS) requires 32 super conducting cryomodules to raise the beam energy of the accelerator to 1.3 GeV. Thomas Jefferson National Accelerator Facility (Jefferson Lab) has been contracted to build and deliver these cryomodules. The SNS cryomodules are being assembled and tested at Jefferson Lab in Newport News, Virginia, and installed at the SNS facility in Oak

Ridge, Tennessee. The cryomodules will be transported via a flatbed air ride trailer over the approximate 500-mile distance. This paper describes the alignment of the cavities and how it is preserved during the shipping and operation of the cryomodule. It includes a description of the support scheme developed to preserve the alignment during shipping and operation, and how the support scheme forms a very rigid structure with natural frequencies well above the expected 10 Hz driving frequencies. The entire cryomodule is supported by a dampened cradle, which is mounted directly onto the bed of the trailer. The transportation environment was evaluated by instrumenting a similar cryomodule with accelerometers during a road test of approximately 300 miles. A complete modal analysis of the whole system has been performed and the steps taken to minimize any transport-induced loading/deflections are discussed.

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TPAH120 Investigation of the Surface Resistivity Tolerance of the Kicker Ceramic Vacuum Chamber at APS

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The conductive coating on ceramic kicker vacuum chambers affects the pulse width, amplitude and phase of the kicker magnetic field. Differences in the surface resistivity between the chambers cause each kicker magnetic field to have slightly different pulse shapes, resulting in unwanted betatron oscillations of the stored beam during injection into the storage ring at the Advanced Photon Source (APS). The purpose of this study is to define acceptance criteria for the coating consistent with minimizing the betatron oscillation. Tracking simulations of the injection bump provide us with the tolerance on the variation of surface resistivity for each chamber. The magnetic fields penetrating the kicker chambers are measured for an applied field of a 4-microsecond-wide half-sine wave and compared with eddy current analysis calculations to arrive at an effective average surface resistivity. Local variations of the resistivity are also measured to find the coating uniformity.

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TPAH121 A Laser Strain Gauge for Accelerator Targets

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Multi megawatt accelerators can deliver sufficient power to a target to destroy it in a few pulses. In order to look at the response of solid and liquid targets under these high power pulses, we are developing optical methods of measuring surface deformations with time resolutions limited by laser pulse lengths. These methods can be used to examine the surfaces of solids and liquids during elastic deformation and unstable hydrodynamic flows. We present preliminary results of a system designed for a target tests using the Brookhaven AGS. Applications for measuring beam profile are also discussed.

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TPAH122 Injection and Extraction at Damping Ring of an Electron-Positron Injection Complex VEPP5

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Engineering aspects of electron and positron injection, storage and extraction in damping ring of injection complex are described. Symmetrical strip-line type kickers are used in quasi-traveling wave mode. A generator of a pair of negative and positive polarity pulses consists of two double pulse forming network (PFN). Both PFNs charged up to 50 kV using a common pulse transformer. Every PFN commutates by single high-voltage hydrogen thyatron. One of thyatrons has a floating cathode. A special design of resistors are used as