

Abstract Submitted
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Overview of Recent NSTX Research Facility Upgrades and Plans¹

MASAYUKI ONO, PPPL, Princeton University, NSTX TEAM — The 2010 NSTX experimental campaign started with the Liquid Lithium Divertor (LLD) and the Beam Emission Spectroscopy (BES) commissioning. With lithium coating, ELM-free discharges were obtained over a wide range of lower triangularity and strike-point including on the LLD surface. Initial BES data was taken where coherent MHD activity was evident in spectrograms. For FY 2011, a second switching power amplifier for the non-axisymmetric coils, extra channels for the multi-pulse Thomson scattering, the MSE diagnostic based on laser-induced fluorescence, the tangential Fast Ion D-alpha and the tangential soft-x-ray diagnostics are being prepared. For a longer term NSTX facility upgrade, a new center-stack is being designed to double the toroidal field and plasma current while increasing the plasma pulse length from the present ~ 1 s at 0.5 T to 5 s at 1 T. The second more tangential neutral beam is also planned to double the NBI heating power while improving NBI current drive efficiency. The upgrade will reduce the plasma collisionality toward those expected for the next step STs, and enable a demonstration of the fully non-inductive operation required for next-step applications.

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Masayuki Ono
PPPL, Princeton University

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