

Abstract Submitted  
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**An Overview of NSTX Research Facility and Recent Experimental Results**<sup>1</sup> MASAYUKI ONO, Princeton University, NSTX TEAM — The 2006 NSTX experimental campaign yielded significant new experimental results in many areas. Improved plasma control achieved the highest elongation of 2.9 and plasma shape factor  $q_{95}I_p/aB_T = 42$  MA/m·T. Active feedback correction of error fields sustained the plasma rotation and increased the pulse length of high beta discharges. Active feedback stabilization of the resistive wall mode in high-beta, low-rotation plasmas was demonstrated for  $\sim 100$  resistive wall times. Operation at higher toroidal field showed favorable plasma confinement and HHFW heating efficiency trends with the field. A broader current profile, measured by the 12-channel MSE diagnostic in high beta discharges revealed an outward anomalous diffusivity of energetic ions due to the n=1 MHD modes. A tangential microwave scattering diagnostic measured localized electron gyro-scale fluctuations in L-mode, H-mode and reversed-shear plasmas. Evaporation of lithium onto plasma facing surfaces yielded lower density, higher temperature and improved confinement. A strong dependence of the divertor heat load and ELM behavior on the plasma triangularity was observed. Coaxial helicity injection produced a start-up current of 160 kA on closed flux surfaces.

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