

Abstract Submitted
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Research directions and highlights from the 2006 NSTX experiments.¹ R. RAMAN, University of Washington, NSTX RESEARCH TEAM — NSTX research in toroidal magnetic confinement at low aspect ratio has focused this year on experiments making use of new capabilities in five areas. First, experiments have investigated coating the plasma facing surfaces with evaporated lithium as a means to reduce wall recycling and benefit confinement. Second, highly elongated shapes were developed to produce MHD stable plasmas with a high fraction of bootstrap current and low resistive dissipation of poloidal flux. Third, external non-axisymmetric field correction coils were used both to reduce intrinsic field errors and to provide active feedback control of the resistive-wall mode in high-beta plasmas. Fourth, a tangentially viewing small-angle scattering diagnostic for millimeter microwaves was used to measure density fluctuations with a radial component of their wavenumber comparable to the inverse of the electron gyro-radius. Lastly, the technique of coaxial helicity injection was extended to generate record plasma startup current without reliance on induction by a central solenoid. Other experiments have been conducted to address research of high priority to the ITPA and ITER.

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