NSTX Weekly Report (November 18, 2011)

NSTX is in the Upgrade Project outage in FY 2012

Members of the NSTX Team participated in the 53nd Annual Meeting of the Division of Plasma Physics of the American Physical Society in Salt Lake City, Utah, Nov 14 - 18, and presented 8 invited talks, 14 contributed talks and 48 contributed posters. The invited talks were: "Effect of non-Maxwellian Electron Energy Distributions on Langmuir Probe Measurements and Heat Transmission in Tokamak Divertor Sheaths" by M. Jaworski; "H-mode Pedestal Evolution in ELMy and ELM-free discharges in NSTX" by A. Diallo; "Deuterium retention enhancement in lithiated graphite plasma-facing surfaces in fusion devices" by J-P. Allain (Purdue University); "Experimental Study of Parametric Dependence of Electron-gyro Scale Turbulence on NSTX" by Y. Ren; "Suppressing Electron Turbulence and Triggering Internal Transport Barriers with Reversed Magnetic Shear in NSTX" by J.L. Peterson; "Simulation of microtearing turbulence in NTSX and scaling with collisionality" by W. Guttenfelder; "Understanding disruptions in tokamaks" by L. Zakharov; "Developing the Core Physics Scenarios For Next Step STs" by S. Gerhardt. (M. Bell)

The article "L-H Threshold Studies in NSTX" by S.M. Kaye (PPPL) et al. was recently published in Nuclear Fusion Vol 51 (11) 113019 (2011). This paper describes a series of experiments aimed at characterizing the L-H threshold dependences on plasma isotope, plasma current, X-point radius and Lithium conditioning. Furthermore, it relates the ease of access to the H-mode to the shear in the radial electric field as calculated by the XGC-0 code. Lastly, it examines the confinement quality for heating power just above the threshold power, finding regimes in which H~1, consistent with ITER requirements. (S. Kaye)

Engineering Operations (A. von Halle, C. Neumeyer)

An Operations Engineering update for the weekly report:

NSTX Upgrade construction activities continued this week with the lift and removal of the neutral beam to torus transition duct, thereby disconnecting the neutral beam-line from the torus and providing the access port needed for upcoming NSTX in-vessel work. Removal of diagnostics, cables and tray-work from the vacuum vessel, and the relocation of electronic control racks also continued. Drawings for new PF coil supports have been approved, and are ready for shop fabrications.

Access to the NSTX test cell will be available only through previous arrangement with the Upgrade Work Control Center.