

## **NSTX-U Weekly Report (Oct. 5, 2012)**

### **NSTX-U is in the Upgrade Project outage in FY 2013**

The paper "Confinement and ELM characteristics of H-mode plasmas in KSTAR" by J-W. Ahn (ORNL), et al. has been published in Nucl. Fusion 52 (2012) 114001 and can be found at <http://iopscience.iop.org/0029-5515/52/11/114001/>. This paper describes the latest results of confinement and ELM characteristics of KSTAR H-mode plasmas as well as the L-H power threshold study as a function of density. Detailed characteristics of three identified types of ELMy H-mode are reported and the pedestal profile dynamics in the ELM cycle is also described. The analysis result of the ELM suppressed H-mode data by an n=1 magnetic perturbation is presented and the role of plasma control in the sustainment of H-mode state is discussed as well. (J-W. Ahn)

Michael Bell (PPPL) presented three lectures to the Joint ICTP-IAEA College on Plasma Physics being held October 1 -12, 2012 at the International Centre for Theoretical Physics in Trieste, Italy. The topics of the three lectures were "Magnetic Confinement Fusion Research: History and Fundamentals", "Progress and Outstanding Challenges in Tokamak Research" and "Spherical Tokamaks: Achievements and Prospects". (M. Bell)

Rajesh Maingi (ORNL) and Michael Jaworski (PPPL) attended the 14th US/Japan High Power Density Devices workshop meeting in Del Mar, CA, October 5-6. Rajesh Maingi presented the talk "Effect of lithium coatings on discharge characteristics and profiles in NSTX" and Michael Jaworski presented a talk titled "NSTX liquid lithium divertor results and on-going research on liquid metal plasma facing components". (M. Jaworski)

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

NSTX Upgrade construction activities continued this week with the removal of outer TF's # 4 and # 12. Two new upper umbrella legs and one lower have been bolted in place, and will be welded next week. The clean-up and polishing of the TF inner quadrant mold has been completed. Alignment spiders are being installed on NB2 in preparation for aligning the beam-box after it's lifted on to its stand next week.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration continued with a peer review to coordinate ongoing Field Coil Power Conversion (FCPC) system activities and resource needs for a timely recommissioning of the NSTX power supplies. Ex-vessel layouts of the MPTS Laser inputs have been established, and the final design review for the Laser Box, Flight Tube and Calibration Probe will be held later this month.

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