

## **NSTX Weekly Report (December 17, 2010)**

**FY 2011 NSTX plasma operations started on October 4, 2010**

**FY 2011 NSTX Outage started on October 25, 2010**

**Planned Run Weeks: TBD**

**Run Weeks Completed: 4.21 run weeks and 839 plasma shots**

The 2nd International Symposium on Lithium Applications for Fusion Devices will be held on April 27 - 29, 2011 at Princeton Plasma Physics Laboratory, Princeton, New Jersey, USA. This symposium will include sessions for: 1. Lithium effects on edge and core plasma properties in magnetic confinement devices; 2. Laboratory experiments on plasma-lithium interactions; 3. Technologies for handling solid, liquid and vapor lithium; and 4. Other lithium-related subjects. A special session is planned on the development of technologies of lithium applications for fusion reactors. Those who wish to make presentations on a pertinent topic for the symposium are requested to submit by e-mail ([mono@pppl.gov](mailto:mono@pppl.gov)) a one-page abstract of the proposed presentation by January 31, 2011. Please visit our conference web page <http://isla2011.pppl.gov/>.

The paper "Flow and shear behavior in the edge and scrape-off layer of L-mode plasmas in National Spherical Torus Experiment" by Y. Sechrest (Univ. Colorado), et al., has been accepted for publication in the Physics of Plasmas. This paper describes the behavior of fluctuations in the edge and scrape-off layer (SOL) of NSTX L-mode plasmas, as observed by the gas puff imaging (GPI) diagnostic. Calculation of local, time resolved velocity maps using the HOP-V code enables analysis of turbulent flow and shear behavior. Periodic reversals in the direction of the poloidal flow are observed near the separatrix, and poloidal velocities and their radial shearing rate are well correlated with the fraction of D-alpha light contained in the SOL, which acts as a measure of turbulent bursts. (T. Munsat, Univ. Colorado)

S. Kaye attended the 1<sup>st</sup> ITPA CC/CTP meeting held in Cadarache on Dec. 13-15, 2010. He gave presentations on work being done in the Transport and Confinement ITPA TG that he is chairing. These included work on validating transport models during the current ramp up phase, and a status of the 2010, and proposal for 2011, Joint Experiments. He also represented NSTX in discussions of programmatic commitments to the Joint Experiments and Activities, and he gave brief overviews on how NSTX can address the high priority ITER issues of ELM control and mitigation, and disruption avoidance and mitigation. (S. Kaye, PPPL)

R. Maingi presented a seminar at UW-Madison "Effect of lithium wall coating on edge profiles, transport, and ELM stability in NSTX." There was substantial interest in the results, and collaborative discussions with PEGASUS and HSX were also held. (R. Maingi, ORNL)

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

The NSTX outage continued this past week with the completion of Romer arm measurements of the Liquid Lithium Divertor (LLD) plates and surrounding tiles, and the start of in-vessel tile sanding/cleaning. Tiles surrounding the LLD plates are now being removed to help in the upcoming plate cleaning, and to provide needed access for LLD heating/cooling line inspections. New cables for the addition of the second Switching Power Amplifier system have been installed and tested this week, and helium and water piping modifications needed for the

new MSE-LIF diagnostic continued.

Access to the NSTX test cell will be available this coming week, but in-vessel access will be limited during tile and LLD plate cleaning.

### **Research Operations (M. Bell)**

#### **Boundary Physics Operations (H. Kugel)**

- Liquid Lithium Divertor (LLD)
  - LLD pre-cleanup testing and inspection tasks were completed. Removal of the inner and outer graphite tiles surrounding the LLD began in preparation for cleaning.

#### **Diagnostic Operations (R. Kaita)**

- The in-vessel calibrations for diagnostics were completed with the photometric calibration of the VIPS visible spectrometer. Requests for pre-run calibrations are being solicited, to determine if any could be completed before the calibration period presently scheduled for the end of the outage.