

## NSTX Weekly Report (July 14, 2006)

**FY 2006 NSTX plasma operations completed on June 23, 2006.**

**Joule Milestone: 11 weeks**

**Achieved: 12.66 weeks**

The manuscript, "Three wave interactions between fast ion modes in the National Spherical Torus Experiment" by N. Crocker (UCLA) et al. has been accepted for publication in PRL. The paper shows a correlation between fast ion loss and simultaneous bursts of energetic particle modes and toroidicity-induced Alfvén eigenmodes. The non-linear coupling between the modes concentrates the energy of the TAEs into a toroidally localized perturbation frozen into a rotating structure formed by the EPs. The redistribution of energy modifies the effect of the TAEs on fast ion loss. (S. Kaye)

The annual NSTX Results Review will be held on Wed and Thurs, July 26 and 27. The agenda for the meeting is presently being assembled, and it will be distributed next week. The meeting will be held in LSB318, and there will be remote access for off-site participants. The Review will cover not only experimental results, but also any modeling and theory work that has been done during the past year by the NSTX team members. (S. Kaye)

There will be no NSTX Physics meeting on Monday, 7/17. (S. Kaye)

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

The NSTX neutral beam duct was removed this past week to provide a vessel access port, and detailed in-vessel inspections have been performed. After photographing all areas, surface samples were taken, and coupons as well as some carbon tiles were removed for analysis.

The test cell will remain in free (card reader) access through the coming week.

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

#### Diagnostic Operations (R. Kaita)

- The dust collection system from INEEL was placed on the vent line during the first day of air purging for the NSTX vacuum vessel. Analysis of what was collected will be performed on the main campus at Princeton University and other offsite laboratories.
- Calibrations during the last week included the optical fibers and photomultiplier detectors for the 48 channels of the Johns Hopkins University "optical" X-ray array.

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

- Lithium Pellet Injector (LPI) maintenance testing and velocity calibrations were performed. (T. Czeizinger)
- A meeting was held in the Test Cell to review concepts for an upgrade of the Supersonic Gas Injector (SGI). (V. Soukhanovskii, LLNL)
- The inspection of the lower NSTX vacuum vessel was completed. No safety issues were identified for the vacuum vessel personnel entry. After photographing all areas, surface samples were taken, and coupons as well as some carbon tiles were removed for analysis. 60 dust samples were taken in poloidal and toroidal arrays, in and out of the lithium shadow, on and under graphite tiles, in a complex, coordinated, chorographic, configuration. 91 photos were taken of poloidal and toroidal post-lithium PFC features. 20 tagged tiles were taken from the vessel for testing. (C.H. Skinner, L. Roquemore, J. R. Timberlake, H.Kugel)