

## **NSTX-U Weekly Report (Mar. 21, 2014)**

### **NSTX-U is in the Upgrade Project outage in FY 2014**

A paper titled “Observation of Edge Instability Limiting the Pedestal Growth in Tokamak Plasmas”, by A. Diallo (PPPL) *et al.*, appeared in Physical Review Letters 112,115001 (2014). The reports direct evidence of an instability limiting the pedestal between ELMs. This instability has been characterized experimentally using a suite of edge diagnostics on the Alcator C-Mod tokamak. The measurements clearly showed that the fluctuations have both a density and magnetic component with ion scale and propagating in the ion diamagnetic direction consistent with the kinetic ballooning mode (KBM). Theoretical calculations indicated that the edge pedestal is both ballooning and KBM unstable in agreement with measurements. (A. Diallo)

### **Experimental Research Operations (M. Ono - Acting)**

Ed Magee of the Lawrence Livermore National Laboratory visited PPPL during the past week. He discussed details regarding the installation of three extreme ultraviolet spectrometers with NSTX-U personnel. Interferences with support structures near the midplane port where the instruments are to be located might be resolvable by reorienting them and changing their distance to the vacuum vessel. (R. Kaita, PPPL)

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

NSTX Upgrade activities continued with the ongoing work to wind the new OH coil on the inner TF bundle. OH conductors have been aligned for the brazing to make the transition from the second to third layer of turns. Assembly and vacuum leak checking of the turbo pump tables and spool pieces for the new Torus Vacuum Pumping System is in progress.

Preparations for plasma operations in the NSTX-U configuration also continued with the preparations of the Field Coil Power Conversion (FCPC) rectifiers for upcoming power testing. New fiber-optics between FCPC and the Controls Junction Area are being installed. Recommissioning of primary power equipment for the neutral beam systems continues.

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