

## NSTX-U Weekly Report (March 30, 2012)

### **NSTX-U is in the Upgrade Project outage in FY 2012**

Stanley Kaye (PPPL) gave a presentation entitled *NSTX Research Results* and Ron Strykowski followed with a talk entitled *NSTX Upgrade Overview* at the MAST Research Forum on Wed, 5/28. The talks were given remotely. (S. Kaye)

Jon Menard (PPPL) participated in the kick-off meeting of the newly formed Max Planck / Princeton University Center for Plasma Physics held at PPPL and main campus March 28 – 29, 2012. Menard met with members of the center and described possible NSTX and NSTX-U contributions to reconnection research for the center - in particular error field penetration, NTM triggering, and edge RMP penetration. (J.Menard)

Stefan Gerhardt (PPPL) attended the DIII-D PAC meeting from March 27th to 29th. The PAC provided advice on both near term DIII-D priorities, and on the 5-year plan that is under development. (S. Gerhardt)

Masabumi Nishikawa (Professor Emeritus, Kyushu University, Japan) visited NSTX on March 27-28, 2012 under the US-Japan Exchange Program. He discussed the tritium, lithium and related material issues in a fusion power plant with the NSTX / PPPL researchers and engineers. He gave a seminar entitled "Tritium in a fusion power plant (effect of lithium on tritium balance)" (M. Ono, PPPL)

W. Heidbrink from UC Irvine visited PPPL on Friday, March 30. Among the topics he and his colleagues discussed with PPPL staff was the placement of solid state neutral particle analyzers (SSNPAs) on the NSTX-U vacuum vessel. Candidate locations were identified, and sightlines will be laid out to determine their suitability for the SSNPAs. (R. Kaita, PPPL)

On March 26, R. Raman (U. Washington) gave the talk, "CHI system design for Quest," to the Quest members at Kyushu University. The talk discussed CHI design requirements for (1) Transient CHI, (2) Plasma injection near the edge to steepen the edge density gradient in support of EBW current drive experiments and (3) Steady state CHI current drive. A CHI system design for Quest to meet these requirements seems feasible. The design is different from that incorporated on NSTX as the CHI insulators would not be part of the vacuum vessel structure. A CHI system on Quest would provide new information in the areas of electrode materials, CHI voltage and electrode current density limits in support of NSTX-U and post NSTX-U devices. (R. Raman)

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

NSTX Upgrade construction activities continued this week with the welding of new armor brackets in the vacuum vessel, and the ongoing welding of additional support on the upper vacuum vessel ribs. The upper vessel rib welding is now about 50% complete, and is being done in parallel with the removals of the TF turnbuckles and clevis pads. A prototype of the new TF clevis pad has been fabricated, and trail-fit-ups on NSTX are in progress. Leak checking of the cryogenic manifold on the 2nd NSTX beam-line was successfully completed, and good progress was made on the fabrication of new cryogenic lines. The refurbishment of the

calorimeter for that beam-line, including the implementation of the new double bellows design, was started this week. Technical staff continued on the preparation of the fabrication area for the new center stack.

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