

## **NSTX Weekly Report (Dec. 2, 2011)**

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

A paper entitled "Kinetic energy principle and neoclassical toroidal viscosity torque in tokamaks", by Jong-Kyu Park (PPPL), Phys. Plasmas **18**, 110702 (2011), has been published online via [http://pop.aip.org/resource/1/phpaen/v18/i11/p110702\\_s1](http://pop.aip.org/resource/1/phpaen/v18/i11/p110702_s1). This work showed the equivalence between kinetic energy principle and Neoclassical Toroidal Viscosity (NTV) theory, which therefore can be unified in future study. (J-K Park)

Yeong-Kook Oh (Head of Experimental Research Division, KSTAR Research Center) of National Fusion Research Institute (NFRI), Daejeon, Korea completed his sabbatical year at NSTX/PPPL. He collaborated on NSTX including the NSTX plasma operations, the pilot plant design study and the KSTAR-NSTX collaboration planning. During his stay, he also participated as a member of the ITER magnet system review team in the DOE review of the US ITER project, and visited DIII-D to participate in the 3D field experiments. (M. Ono)

Walter Guttenfelder (PPPL) attended the Physical Society of Japan Plasma Conference 2011 in Kanazawa, Japan Nov. 22-25. He presented an invited talk "Recent Progress in Transport and Turbulence Research at NSTX" summarizing recent experiments and simulations on core transport in NSTX. (W. Guttenfelder)

Michael Bell (PPPL) attended the 21st International Toki Conference, held in Toki, Japan, November 28 - December 1 and hosted by the National Institute for Fusion Science. He presented an invited talk entitled "Progress Towards Steady-State Operation in NSTX Through Advances in Plasma Control and Plasma-Wall Interactions". The conference, which was attended by 284, including 45 participants from overseas, was on the topic "Integration of Fusion Science and Technology for Steady State Operation". (M. Bell)

Charles Skinner (PPPL) attended the third IAEA Research Coordination Meeting on Characterization of Size, Composition and Origins of Dust in Fusion Devices at the IAEA Headquarters in Vienna, 30 November - 2 December, 2011. He gave a presentation on 'Advances in electrostatic dust detection and removal' that summarized recent progress on correlating dust generation with disruptions on NSTX, and presented the first lab results on electrostatic detection of tungsten dust. (C. Skinner)

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

NSTX Upgrade construction activities continued this week with the lift and removal of the vessel center column casing and the PF1A/1B coils. The OH coil, which was removed last week, has been stripped of diagnostics and will be dissected to analyze the condition of insulation/conductors/leads after over 20,000 plasma shots. Dismantling of vacuum piping has started in preparation for the removal of the Torus Vacuum Pumping System, and the removal of diagnostics, cables and tray-work, and the relocation of electronic control racks continued. Also this week, the final design for the new Multi Pulse Thompson Scattering (MPTS) diagnostic vessel interface was reviewed. Access to the NSTX test cell will be available only through previous arrangement with the Upgrade Work Control Center