

NSTX Weekly Report (Sept. 17, 2004)

For FY2004 Joule milestone: 18 weeks; programmatic goal: 20 weeks.
Completed: 21.1 weeks producing 2460 plasmas (Aug. 5, 2004).

Department, Project, Program (M. Ono, M. Peng, M. Williams, E. Synakowski)

- Martin Peng presented an invited talk on "Engineering Assessment and Physics Basis for Spherical Torus Component Test Facility" at the 16th ANS Topical meeting on the Technology of Fusion Energy, which was held in Madison, Wisconsin during September 14-16, 2004. (M. Peng)
- David Mikkelsen presented a talk on "Gyrokinetic simulations of turbulence in NSTX", and an invited talk "Theoretical and Computational Perspectives on Electron Energy Transport" at the EU-US Joint Transport Task Force workshop in Varenna. (D. Mikkelsen)
- The 2nd Japan-Korea Summer School was held at Korean Basic Science Institute(KBSI), Daejeon, Korea for three days (August 25-27). The focus was on plasma diagnostics for the steady state plasmas. Attendants were mostly student and consist of ~100 Korean graduate students and ~10 Japanese students. Invited lecturers (23) consisted of experts mainly from Japan and Korea and also a few experts from Europe and US were invited. The first day was poster day from young scientists who presented many interesting current projects from Korea and Japan. Following two days were intense course on many diagnostics following lectures on physics of steady state plasmas. Hyeon Park gave a lecture entitled "Diagnostics for turbulence measurement and scattering experiment on NSTX". This lecture included principles of the general tools for turbulence study in plasmas such as BES, GPI, reflectometry, MIR, scattering, etc. Also advantages and disadvantages of these tools for the study of ITG, TEM and ETG physics were added. At the end, NSTX scattering system to search for the ETG physics were discussed. Manfred gave a lecture entitled "Advances in the X-ray spectroscopy of the tokamak plasmas". Emphasis was on the strength of X-ray spectroscopy which does not require NBI or DNB. Current efforts on 2-D crystal test on NSTX and C-Mod was discussed. (H. Park)
- Akio Ishida (Professor of Niigata University, Japan) arrived on August 29, 2004 . He is collaborating with researchers on the study of flowing two fluid equilibrium of global quantities on NSTX.

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

The NSTX outage continued this past week with the removal of the UCSD Fast

Reciprocating Probe and the opening of the bay I port. The removal of neutral beam armor tiles for modification to accommodate the high-k scattering lines of sight is in progress and the initial machining of the Bay K port cover for this diagnostic has been completed. Some of the B_Z sensor coils have been removed to replace connectors. The new neutral beam duct bellows has been tested to be leak tight and the installation of the Resistive Wall Mode error field coils continues. Procedures have been developed and lift fixtures are being prepared to remove the center stack casing early next week.

There are no NSTX test cell access restrictions this coming week. (A. von Halle)

Research Operations (M. Bell)

Diagnostic Operations (R. Kaita)

- A design review for the Bay G port cover was held to review candidate locations on for a new visible bremsstrahlung diagnostic view that misses the spike in plasma density near the center stack, and to approve enlarging the port for the electron Bernstein wave antenna.
- Locations for the deposition monitor were determined and mock-up monitors are being made.
- Candidate locations were determined for the new moveable glow discharge cleaning probes and the first lithium evaporator probe.