

Summary of Wave-Particle ET Meeting held on 1/12/06

Viewgraphs and other documents used during the meeting can be downloaded from the following folder on the NSTX Web site:

http://nstx.pppl.gov/DragNDrop/ET_Meetings/Wave_Particle_Interactions/Meeting_01_12_06/

1. Near-Term Run Schedule

The machine ISTP is currently scheduled for the week of Jan 30 - Feb 3. The experimental campaign is now scheduled to start two weeks later, on Feb 20. The first week of the campaign will be dedicated to testing plasma control, and commissioning NBI and various diagnostics (eg: high-k scattering). **A half-day HHFW conditioning run will be included during the first week of the campaign, before Li is introduced.** Li conditioning experiments are expected to start during the second week, starting on Feb 27. There will be a 4-5 day campaign to assess Li conditioning. **Our ET needs piggyback HHFW operation during this post-Li campaign to assess coupling and loading after Li coats the antenna and limiter surfaces. The HHFW FY06 milestone has been cancelled but our ET will still press to emphasize HHFW coupling & deposition physics during 2006 run.**

2. XP Review of "TAE/EPM Impact on Fast Ion Transport (JNBI) & Displacement of NB Ions by MHD" - E. Fredrickson & C. Petty

The goal of this XP is to validate the model of beam driven current without MHD, in a similar manner to the TFTR bootstrap current study (Zarnstorff et al. PRL <60>, 1306 (1988)). The XP calls for careful document of a low (~65 kV) beam voltage shot with weak MHD activity and compare this case to a higher (~90 kV) beam voltage shot with strong MHD. This XP partially addresses the draft FY07 NSTX milestone to "Measure and identify modes driven by super-Alfvénic ions" and also partially addresses an ITPA task. **We decided that this XP should be scheduled well after the start of Li conditioned operation and preferably not until the last weeks of the 2006 campaign, when hopefully we can run routinely at $B_t(0) = 5.5$ kG. Some initial plasma shots can be run during the XP mentioned below.**

3. XP Review of "Fast-Ion Transport by Fishbone Instabilities & Documentation of TAE/EPM Fast Ion Losses" - W. Heidbrink, E. Fredrickson & N. Crocker

The goal of this XP is to exploit new diagnostic capabilities to achieve a quantitative understanding of fast-ion transport due to Strong fishbone & TAE instabilities. It partially addresses the same draft FY07 NSTX milestone and ITPA task as the XP above. The XP calls for documenting fast-ion profiles with the Solid State Neutral Particle Analyzer (SSNPA) and the E parallel to B NPA. It

also calls for fluctuation profiles to be measured with the soft X-rays and UCLA microwave reflectometer system. **The XP can be scheduled to run for one day during the first three weeks following the start of Li-conditioning. SSNPA measurements made during this XP will make important contributions for Deyong Liu's (University of California, Irvine) PhD thesis research.**

Running the XP discharges in helium will significantly reduce passive contributions to the NPA signals and will allow reliable L-mode operation even after Li conditioning. **The XP calls for a shot like 113534, a discharge run on June 25, 2004, a day that Bill Heidbrink characterized as the "most scientifically productive day on NSTX".**