

Research Operations Division Boundary Physics (*H. Kugel*)

- ◆ Lithium Evaporators
 - ▶ Four new LITERs built and installed on probe drives
 - ▶ First two filled, outgassed
 - ▶ One installed on NSTX; other filled with Ar, sealed & placed in storage
pending decision on path forward
- ◆ Materials Analysis Particle Probe (MAPP – Purdue U)
 - ▶ Instrumentation delivered by 2 Purdue students
 - ▶ Fabrication of probe rotation mechanism underway
 - ▶ Installation deferred *pending decision on path forward*
- ◆ Held FDR for the Centrifugal Lithium Granule Injector (D. Mansfield)
- ◆ Commissioned “massive gas injectors” at lower divertor and mid-plane for disruption mitigation studies

Research Operations Division Diagnostics (*R. Kaita, B. Stratton*)

- ◆ MPTS Upgrade (PPPL)
 - ▶ 12 new channels installed, calibrated and ready for plasmas
- ◆ MSE-LIF (Nova Photonics)
 - ▶ DNB injected under remote control into gas for wavelength calibration
 - ▶ Laser will be installed next
- ◆ Tangential FIDA (UC-Irvine) ready to commission with XMP
- ◆ Installation plans for several diagnostics now on hold *pending decision on path forward*
 - ▶ IR camera view of RF antennas (Bay B)
 - ▶ Prototype fusion product detector array (W. Boeglin, FIU)
 - ▶ Fast interferometer/polarimeter (UCLA)
 - ▶ Image intensifier for sFLIP to provide higher time resolution
 - ▶ Divertor-viewing SPRED spectrometer (LLNL)

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RF systems (*J. Hosea*)

- ◆ Performed successful vacuum conditioning of HHFW antenna on 8/4
 - ▶ Sources 1 & 2 rapidly conditioned to $V_{\text{cube}} \geq 25$ kV for 100 ms
 - ▶ Reduced initially erratic coupling between Sources 3 & 4 to below -30 db after replacing control power supply and retuning decoupler
 - ▶ Conditioned Sources 3 & 4 and then 5 & 6 to $V_{\text{cube}} \geq 25$ kV for 100 ms
- ◆ System is ready for operation with plasma
 - ▶ Established good baseline for a clean antenna
 - ▶ Even if TF is not repaired, it would be advantageous to characterize the voltage standoff with lithium coating the antenna before NSTX is brought up to air

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Physics Operations (*S. Gerhardt*)

- ◆ All “basic” modifications for second SPA complete and tested on 8/8
 - ▶ Power supply control code (psrtc) modified and successfully tested
 - ▶ Demonstrated control of 6 SPAs by PCS using current control
 - ▶ Still have some calibration discrepancies and SPA-generated noise remains a problem
- ◆ SPA feedback and control algorithms
 - ▶ Mode proportional feedback and error field control being tested
 - ▶ Started modifications for RWM state-space controller
- ◆ PCS development work
 - ▶ Measurements and code for improved dZ_p/dt calculator implemented and undergoing testing
 - ▶ Implementing methods for reducing transients at phase transitions
 - ▶ Implemented new rtEFIT and developing snowflake tracking algorithm
 - ▶ Hardware in place for real-time rotation measurement