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# Research Operations Division

## Boundary Physics (*H. Kugel*)

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- ◆ Lithium Pellet Injector
  - ▶ Fabrication and assembly of 400-barrel system complete
    - Fired aluminum test pellet
  - ▶ Ready to be installed on machine for next run
  - ▶ Team trained and ready to go
- ◆ Supersonic Gas Injector (NSTX/CDX-U)
  - ▶ Install on CDX-U next week for initial tests
- ◆ NSTX, CDX-U, ORNL, Sandia, UCSD collaborating on Advanced Lithium Wall Coating
  - ▶ Plan to install TIVs for upper and lower divertor evaporators prior to pump-down.
    - Also gain useful view of the inner divertor region accessed during high elongation discharges
- ◆ Installing a tangentially viewing port for divertor camera
- ◆ Measured locations of sample coupons for simulation (J. Hogan, ORNL) of wall deposits (W.R. Wampler, SNL)

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## Diagnostics (*D. Johnson, R. Kaita*)

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- ◆ Much work on diagnostic hardware accomplished over the summer, e.g.
  - ▶ Magnetic sensors for resistive wall mode system installed with upgraded shielding
  - ▶ Spatial calibration of gas puff imaging diagnostic completed with FARO measurement arm
  - ▶ Thomson scattering window replaced
- ◆ Some in-vessel tasks need to be completed before vessel closure
  - ▶ Termination of flux loops in lower secondary passive plates
  - ▶ Blackening of reflective surfaces seen by CHERS
    - Areas indicated by analysis of data from February
  - ▶ Spatial calibrations for CHERS, edge rotation and MPTS
  - ▶ Calibration of the neutron collimator
  - ▶ Installation and calibration of new divertor camera view
- ◆ Plans to shield the solid-state NPA array at Bay I peer-reviewed
  - ▶ Use lead shot molded in epoxy

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## Diagnostics [3]

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- ◆ MSE/LIF
  - ▶ Extracted a beam from new Berkeley source using low ripple supply (PPPL/Nova)
  - ▶ Assessing species mix and stability
- ◆ MSE/CIF
  - ▶ Fabricating filter assemblies and controls
  - ▶ Testing of filters hampered by fluctuations in ambient temperature in development lab.
    - Working on improving this
  - ▶ Goal remains 4 channels instrumented for start of run
- ◆ High-k scattering proceeding to design review on Oct. 8
- ◆ Poloidal CHERS
  - ▶ Will not be possible to install this fall

# Research Operations Division

## RF Systems (*R. Wilson*)

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- ◆ Feedback on plasma radial position to control antenna loading
  - ▶ Installed cables to plasma control system, *but*
  - ▶ Awaiting the Lemo Ts to complete the hookup

# Research Operations Division

## Physics Operations (*D. Mueller*)

- ◆ Reduced delays in real-time feedback loop (Gates, Marsala, Gibney)
  - ▶ Aim to increase achievable elongation and raise  $\beta$  limit
  - ▶ Maximum (average) propagation delays from ~5 (3.1) ms to ~1.8 (1.4) ms by optimizing software
  - ▶ Another factor 2 possible with hardware improvements
    - Assessing whether this is feasible now given requirements for power supplies to test TF joints
- ◆ Experiments with UWash on adding CHI to inductive discharges in HIT-II conducted in August (D. Mueller)
  - ▶  $I_p$  from 120 to 150 kA with 10 kA of injector current
    - Increases only if  $\Lambda_{inj} > \Lambda_{plasma}$
  - ▶ CHI plasmas died early due to high density
  - ▶ EFIT analysis had convergence problems
  - ▶  $T_e \approx 150$  eV during CHI measured by T.S.
  - ▶ Need power supply to control CHI current at higher level
- ◆ Design proceeding on capacitor bank (~100kJ) to power "transient" CHI scheme in NSTX