MHD 2007 Mid-run Assessment: Macroscopic MHD

❑ MHD XPs requesting run time   **"Active XP"** "Completed XP" "Delayed XP"

- ❑ XP701: Assessment of intrinsic error fields after TF centering (Menard)   1.0 days
- ❑ XP702: RFA detection optimization during dynamic EF correction (JM)   1.0 / 1.5 days
- ❑ XP728: RWM active stabilization and optimization – ITER scenario (SS)   1.5 days
  - ● Assessment of RWM mode stiffness (Okabayashi)   -- days
  - ● XP729: n = 3 magnetic braking w/ optimal n = 1 error field correction (Garofalo) 0.5 days

5 days

- ❑ Fast Soft X-ray Camera (FSXIC) Imaging of MHD (Bush)   piggyback
- ❑ XP727: Exploration of stability limits at high I_N with strong shaping (DG)   1.0 days
- ❑ XP703: B, q scaling of low-density locked-mode threshold at low-A (JM)   1.5 days
  - ● XP704: Measurements of plasma boundary response to applied field (Park)   -- days
- ❑ RWM suppression physics at low aspect ratio (Sabbagh)   1.0 days
  - ● RWM D3D+ joint experiment – ε, β, $V_\phi(\psi)$ effects on $\Omega_{crit}(\psi)$ (Sabbagh)   1.0 days
- ❑ XP743: NTV dissipation physics: n = 2 perturbations and ν_i (Sabbagh)   0.5 days
  - ● Toroidal flow damping by island-induced NTV (Shaing)   -- days

10 days

- ❑ XP739: Marginal island width of NTMs in NSTX (LaHaye)   0.5 days
- ❑ XP740: NTM threshold at low plasma rotation (Strait/Buttery/LaHaye)   0.5 days
- ❑ Exploration of stability limits at high I_N with n=1 control (Gates)   1.0 days
- ❑ Measurement of scrape-off layer current during MHD (Takahashi)   PB / 0.5 days
- ❑ RWM resonant field amplification, destabilization of n > 1 (Sabbagh)   1.0 days

Run time guidance: **5 – 10** run days   (16.0 - 21.0 run days originally requested)

NSTX

MHD 2007 Mid-run Assessment: Energetic Particles

"Active XP" "Completed XP" "Delayed XP"

❑ MHD XP run time (part II)

   ❑ XP705: Multi-mode beam loss power scan (Fredrickson)   2.0 days
- Generation of *AE quiescent plasmas (Fredrickson)   - days
- Beam power scan of fast ion loss induced by multiple MHD modes (Fu)   - days

3 days ❑ XP706: Alfven cascades on NSTX (Fredrickson/Gryaznevich)   1.0 days
- -

   ❑ XP741: Alfven-acoustic modes (Gorelenkov)   1.5 days
- Three-wave coupling effects on fast-ion loss (Crocker)   - days

4.5 days - Stabilization of CAE/GAE hole-clumps (Heidbrink)   - days
- -

   ❑ XP707: MHD-induced energetic particle redistribution - vsNPA (Medley)   1.0 days

   ❑ Structure of Bounce-Resonance Fishbone-like Modes with n > 1 (Bush)   0.5 – 1.0 days

   ❑ Ion power balance with modulated NBI (Ross)   1.0 days

   ❑ TAE hole-clumps (Fredrickson)   1.0 days

   ❑ Rho_beam scan for NBI driven modes (NSTX & DIII-D) (Fu)   1.0 days

   ❑ CAE/GAE stochastic thermal ion heating (Fredrickson)   1.0 days

   ❑ RF beat wave excitation of *AE (Fredrickson)   1.0 days

Run time guidance: 3 – 4 run days   (13.0 – 13.5 run days originally requested)

NSTX

V1.1

XP728: RWM active stabilization has just begun

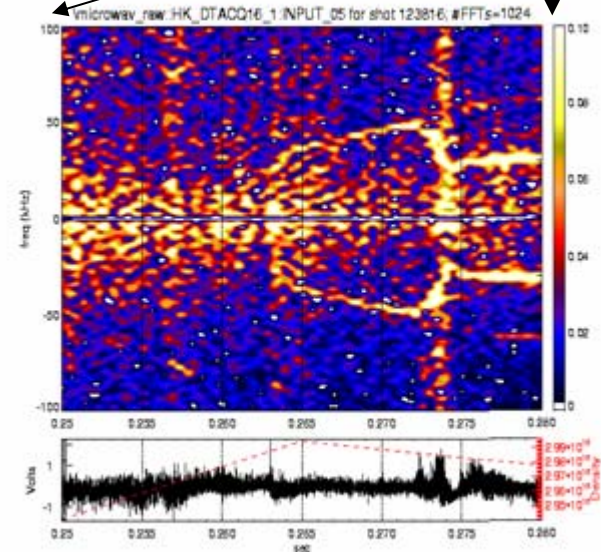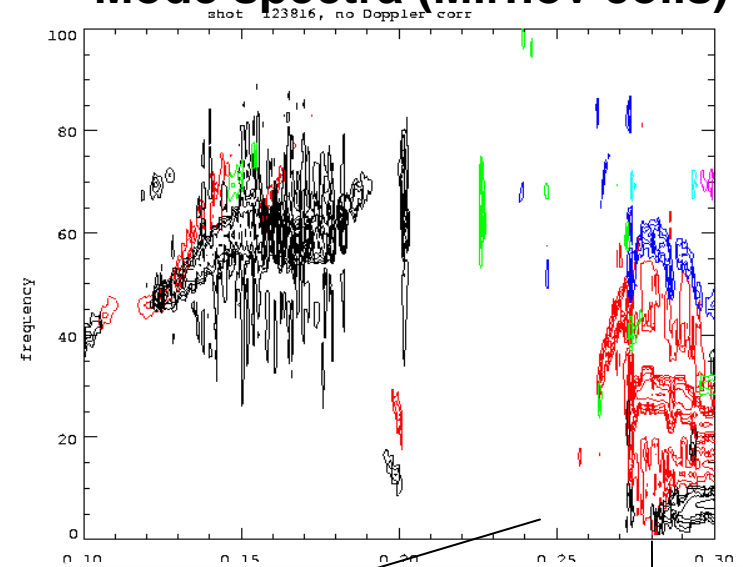**Feedback phase scan with Bp^{upper} + Bp^{lower}**

Decreasing phase
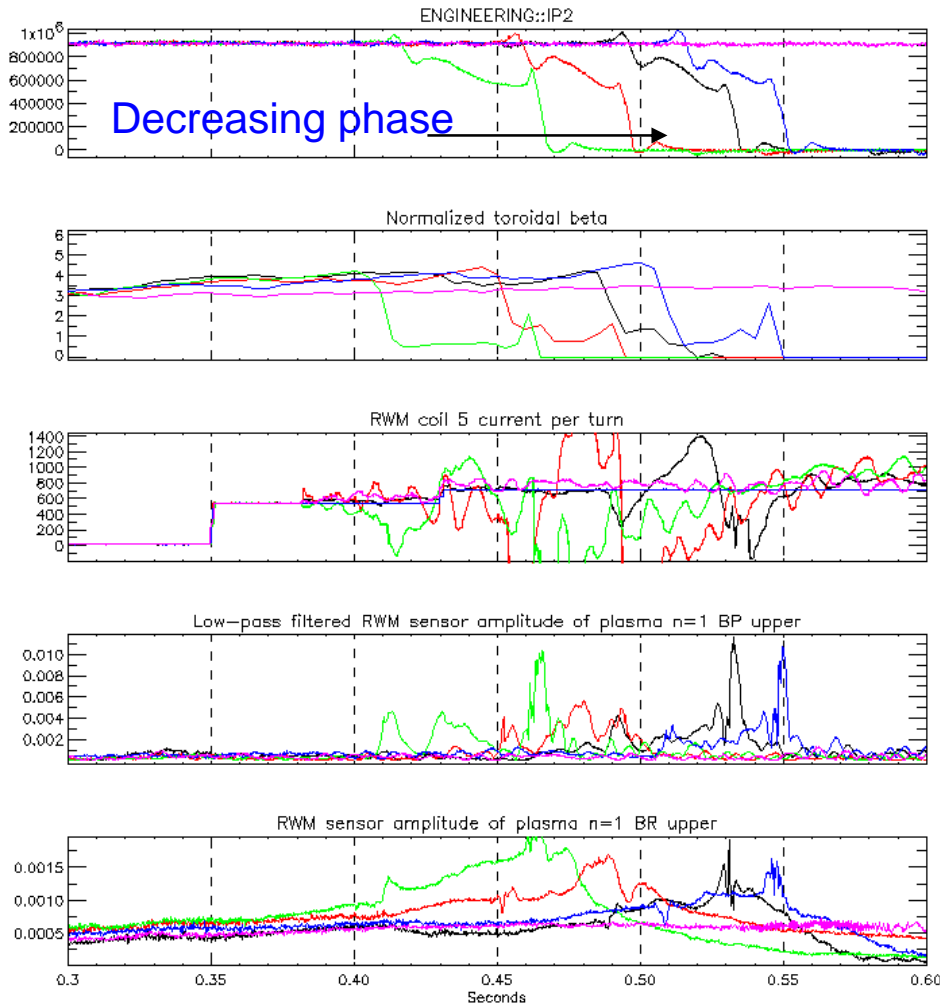
- Spend most time recreating target plasma

- Recreated active feedback with Bp^{upper} sensors

- Started phase scan for feedback with Bp^{lower} + Bp^{upper} sensors
  - Only ran one stabe phase (90 deg!) but only 2 NBI

- Created RWM passive stable plasma with zero rotation at q = 2 surface

- Need 1 run day to complete with reproducible target

BAAE XP741 had a good start (Gorelenkov, et al.)

Mode spectra (Mirnov coils)

□ **Achieved results so far:**

- □ BAAE modes are clearly seen, MSE q-profile reconstruction consistent

- □ density scan 4 shots

- □ rotation braking 2 shots

□ **Results not achieved:**

- □ Angel-fish suppression

- □ three wave coupling

- □ BAAE: no NPA scan.

High-k scattering

NSTX