

Proposals for 2010 XPs

1. H-mode TAE avalanches
2. Documentation of Angelfish
3. Document high frequency CAE
4. Revisit again $n=3$ braking and affect on TAE stability.
5. Addition of TAE excitation coil?

H-mode TAE Avalanches w/BES

- Need to extend L-mode TAE avalanche studies to H-mode.
- H-mode avalanches are seen with full voltage beams, no difficulty getting MSE data.
- Measure fast ion redistribution, mode amplitudes, equilibrium parameters (q-evolution).
- Maybe avalanche threshold

Measure radial structure of Angelfish

- Dedicated experiment; operation at 32 kA, 2.5 kG where best Angelfish were seen.
- Typically in bat-ear H-modes, so no reflectometer data.
- BES should be able to capture mode.
- Maybe FIDA might see something – if fast enough (0.5ms chirps every couple of ms)

High-frequency CAE

- These modes typically appear with $n=1$ kink mode, possibly as a result of fast ion redistribution.
 - Frequency spacing, mode numbers consistent with CAE.
 - Propagate co-parallel to beams, $8 \leq n \leq 13$.
 - Few fast ions in unperturbed distribution meet resonance condition.
- Probably pick up in piggy-back, but might need dedicated run-day

N=3 Braking

- Some data, *e.g.*, 132758 – 132769, but avalanches and TAE not that good.
- Spend a day developing good avalanche target, incl. small Ip and TF scan.
- Then add braking.

Add Coil for TAE excitation?

- Add simple ≈ 5 turn coil as shown – ≈ 15 cm x 80 cm, # turns tbd
- Very similar to C-Mod coil (15cm x 25cm, 5 turns, 400 W amplifier)
- Possible to add this opening, if we think it's worth pursuing

