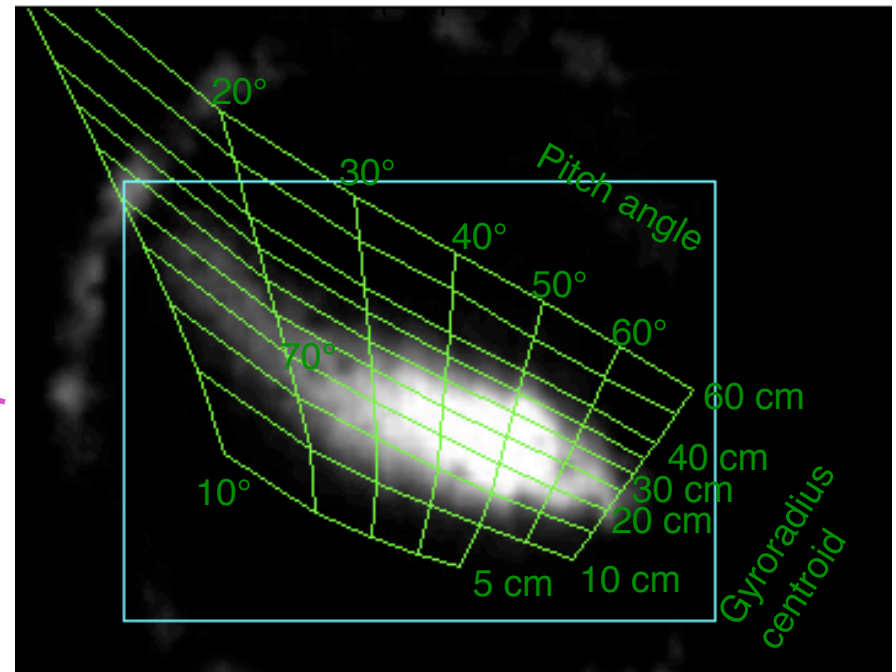
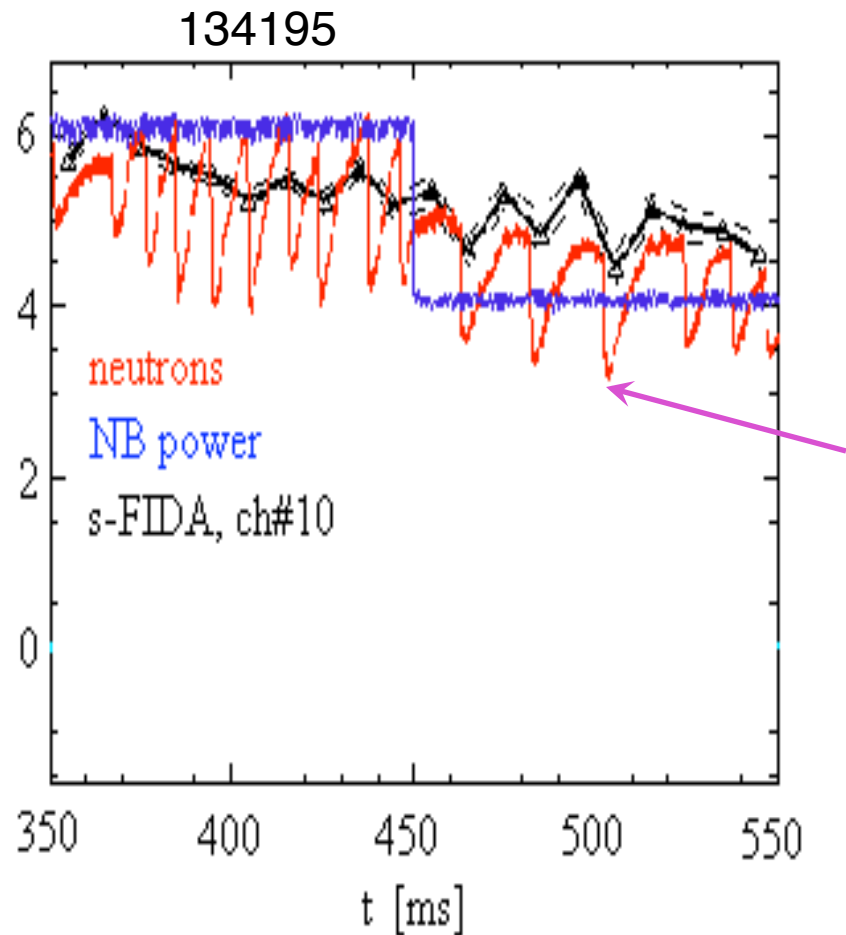


Energetic Particle Modes (EPMs) warrant further study in 2010

- EPM bursts are prominent cause of loss of NBI loss NSTX (up to 35% loss in 100 μ s)
- Show signatures of stochastic transport & loss of fast ions
- Have avalanche character
- Sometimes coincide with changes in current profile
- Appear very often during I_p ramp up and may cause sputtering of impurities into plasma during that phase

Neutron drops correlate with drops in FIDA confined beam ion density & loss burst



sFLIP image

- EPM burst highlighted has 36% drop in neutron rate & fast ion loss over wide range of pitch angles, all in $<100 \mu\text{s}$

Proposed 2010 EPM XP

- Repeat 700 kA & 1 MA shots taken in 2009
- Use BES & additional reflectometer channels to get additional information about mode radial structures—compare with NOVA calculations
- Run sFLIP camera at 100,000 frames/s to better resolve beam ion loss evolution
- Use SSNPA & FIDA together for finer resolution of beam density profile
- Apply rotational braking to get mode dispersion relation (unfinished 2009 work)