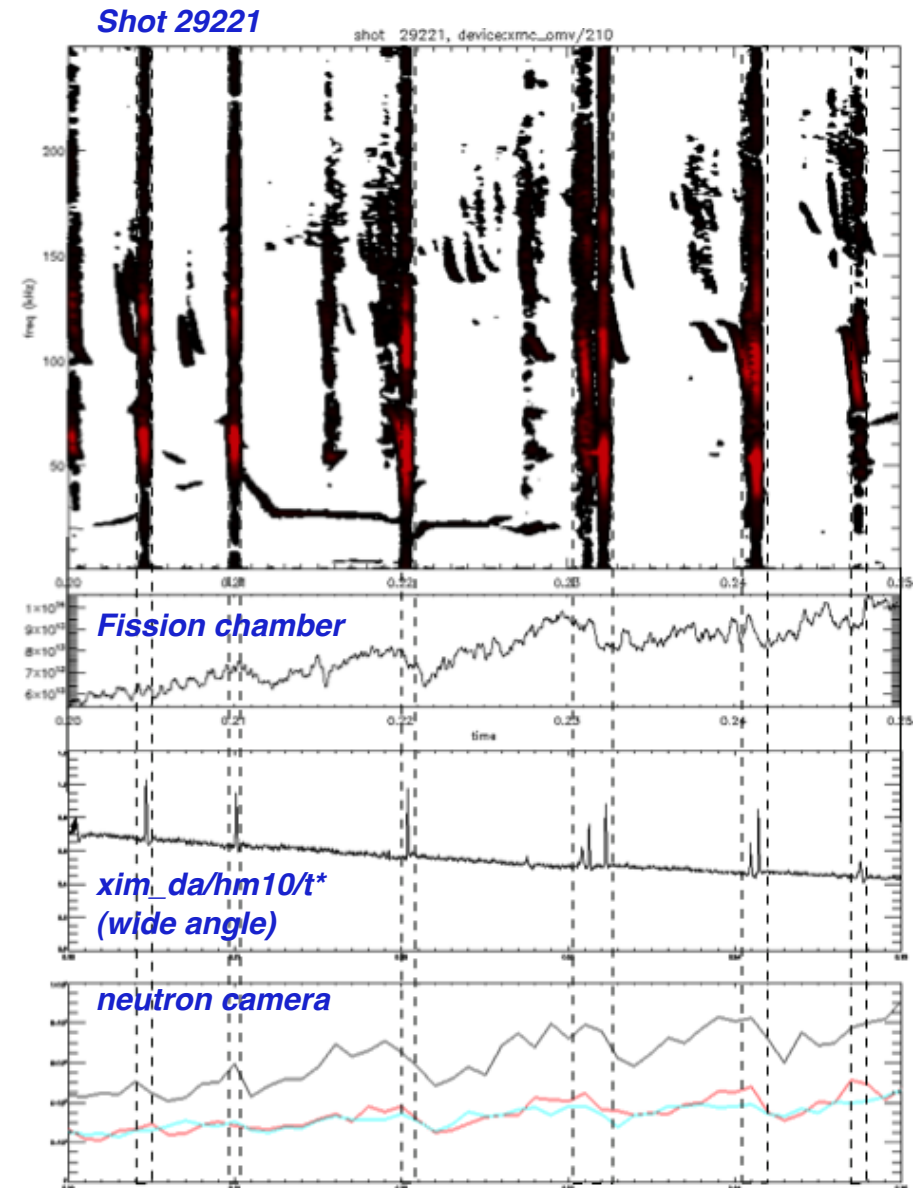


Report on MAST M9-IPS-002 June 24-27

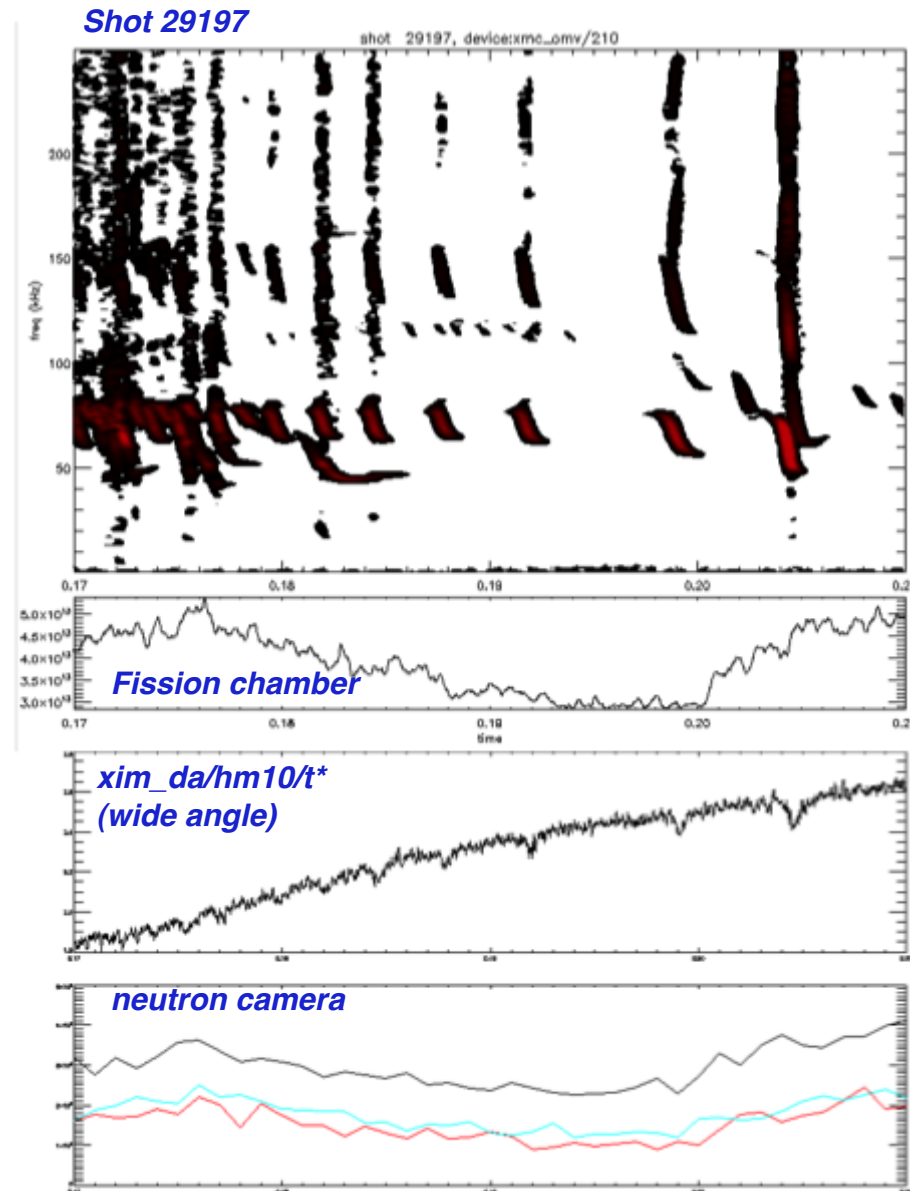
- Nominal experimental goal was to study parametric dependence of fast ion redistribution previously seen using Neutron Camera
 - As on NSTX-U, beam current drive needed for MAST-U
 - Want to know operational space to avoid redistribution events
 - Mostly, redistribution means fishbones (EPMs)
 - $q(0) > 1$?
- TAE avalanche search proposal was parasitic to this experiment.
 - TAE avalanches were not quite found
 - strong coupling of TAE and EPM common
 - possible EPM+TAE avalanche events
 - TAE-only conditions found
 - TAE bursts not quite avalanche-like?

Good correlation between D-alpha spikes, central neutron camera and EPM/TAE bursts is now seen.

- Neutron signal (fission chamber) is noisy.
- Core neutron collimator signal was perhaps more clear.
- D-alpha monitors were maybe best bet for detecting qualitative fast ion loss events.
- Discussions of what the signal meant.

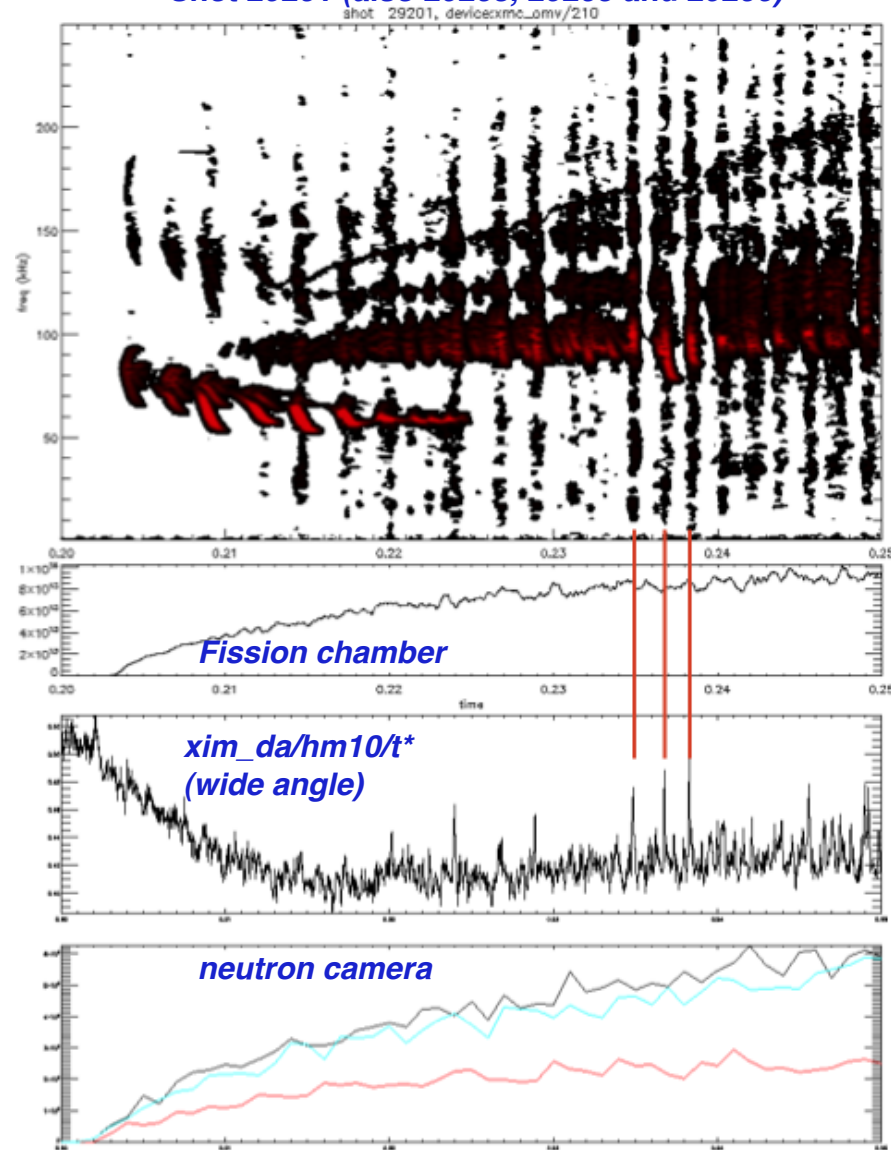


Sometimes, drops in D-alpha light are correlated with EPMs; may always be present, but masked by spikes

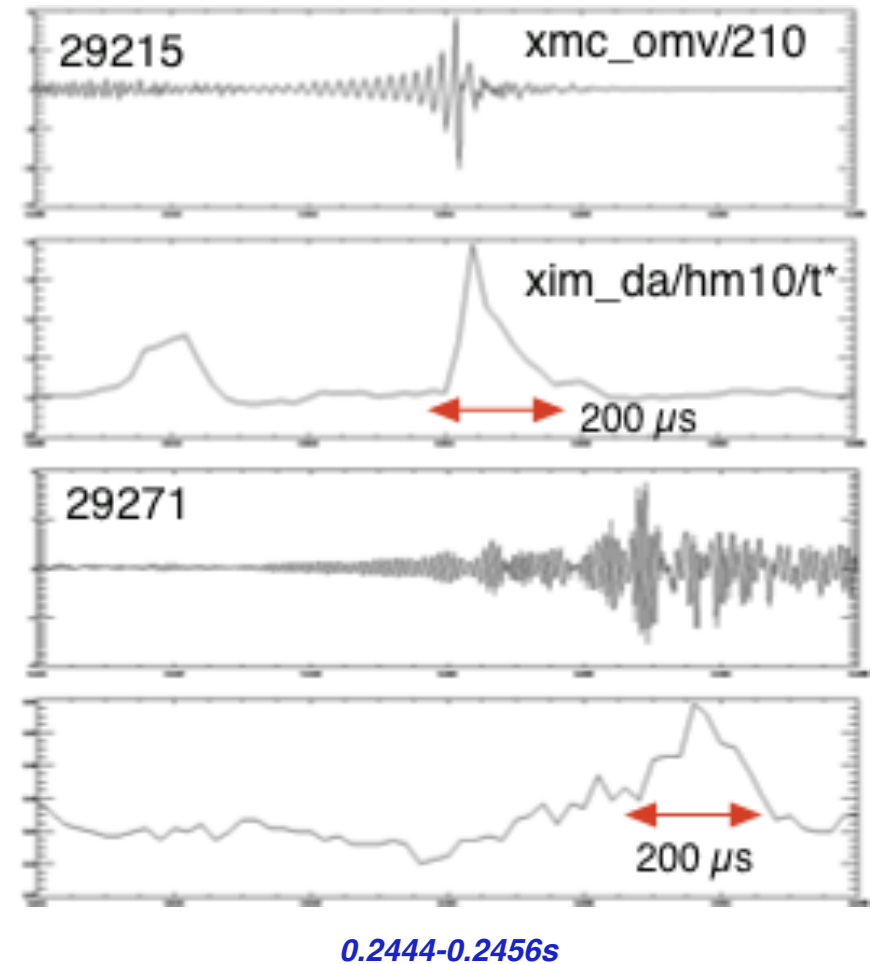
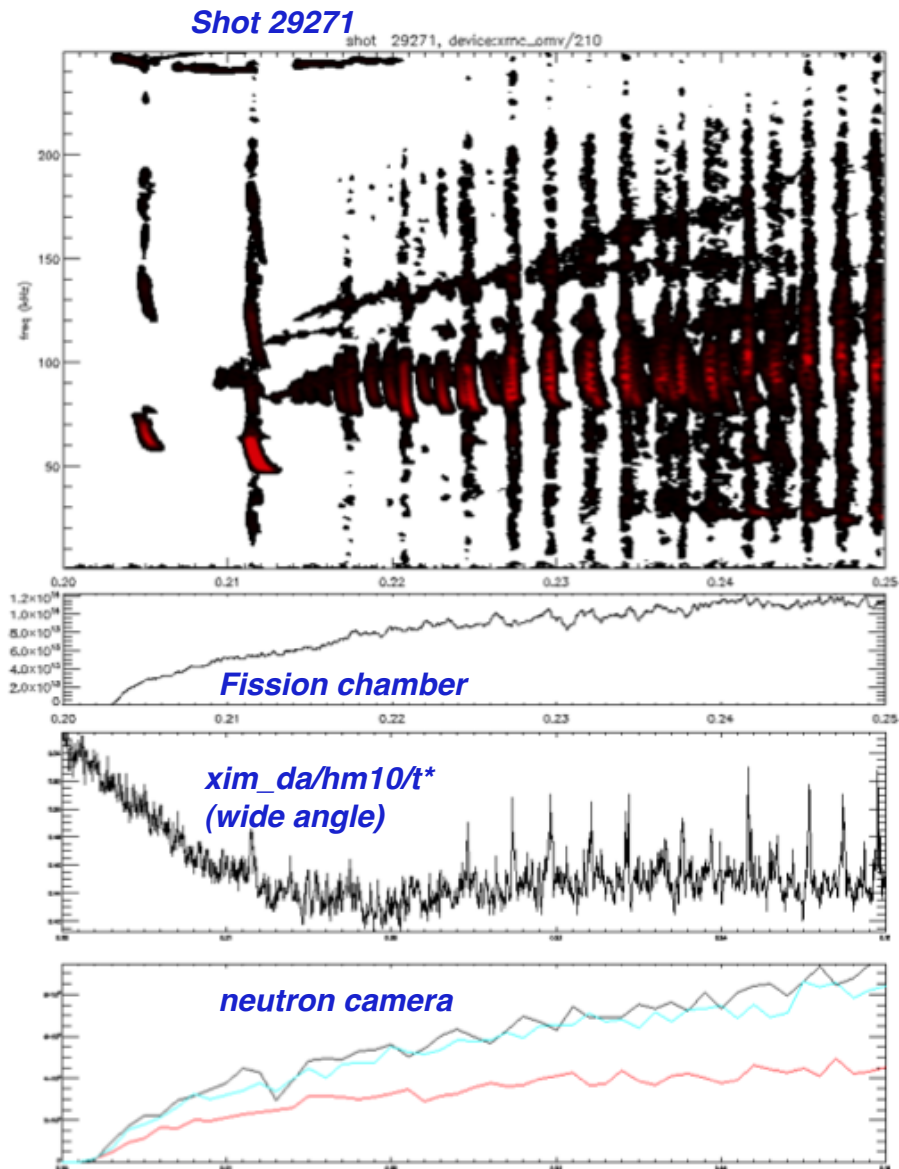


Possibly best example of TAE-induced loss events, but not quite to the level of avalanches

Shot 29201 (also 29203, 29205 and 29206)



Better example of TAE-induced loss events, but still not quite to the level of avalanches



MAST can operate with parameters similar to NSTX, but clear avalanches not yet found

- Overlay of MAST/NSTX data is a little “apples to oranges” in that NSTX points are from TRANSP, MAST from a simple semi-analytic model.
- Possible reasons for no avalanches are:
 - different q-profile
 - different rotation profile
 - presence of EPMS (fishbones)

