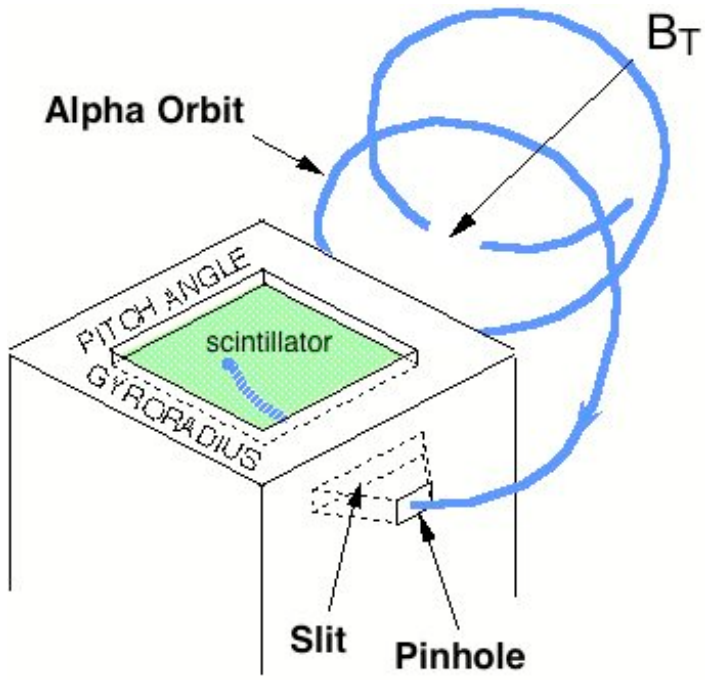
sFLIP base operation plan 2008



Scintillator detector: principle of operation

- Operate camera at 1000 frames/s (as in 2007), with raw images and average camera intensity vs time waveform written to data tree
- PMT+fast digitizer will capture total loss vs time at 2.5 Ms/s--then compare freq spectrogram with Mirnovs, reflectometers (á la AUG)

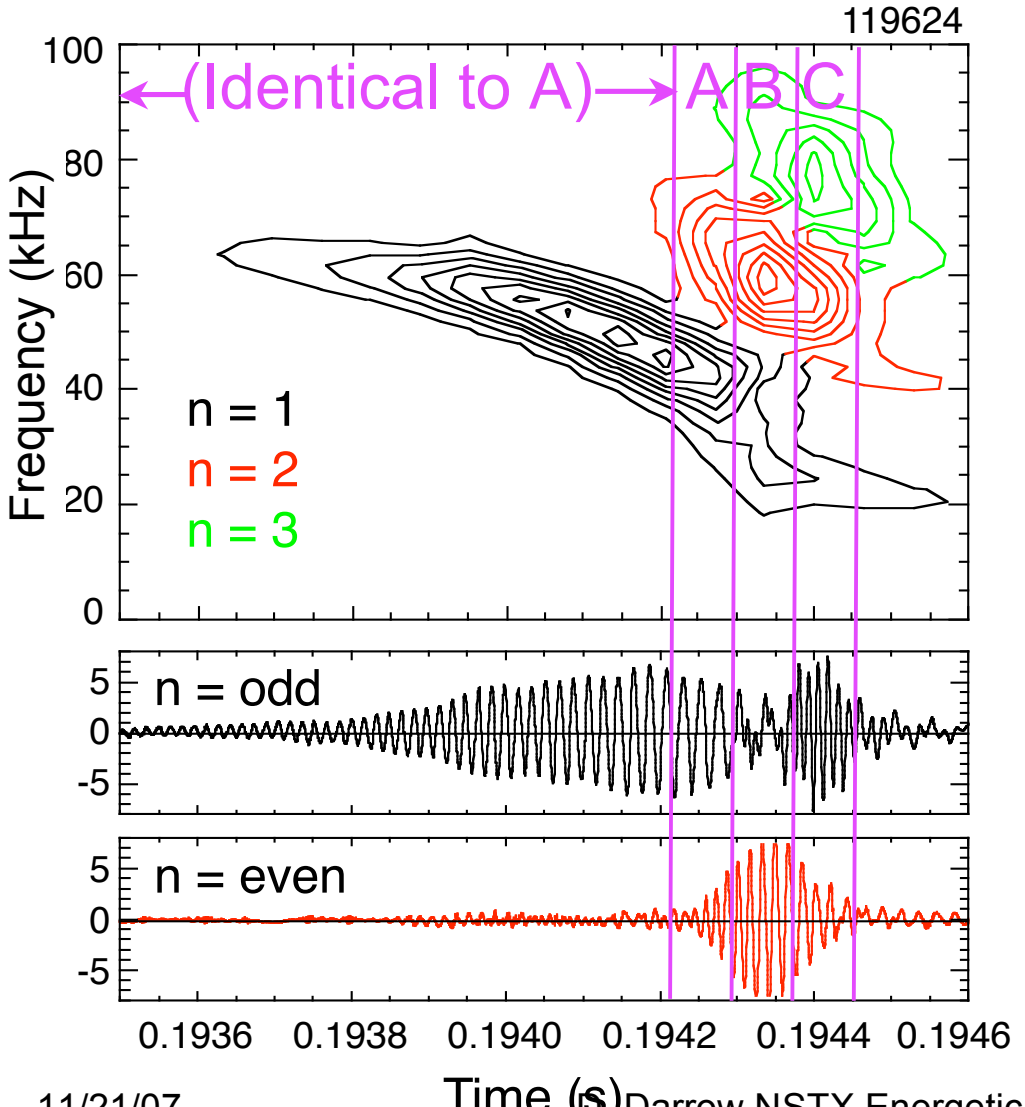
Possible 2008 sFLIP enhancements

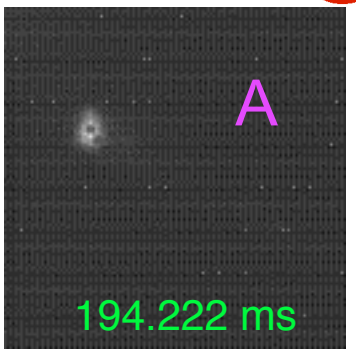
- Could try camera operation at 5000 frames/s
  - Some risk as camera is 10 yrs old and operation at >1000 fps requires active cooling (=more work)
  - There is **no** backup camera for this diagnostic
- If PMT total intensity signal vs t looks interesting, could divide scintillator into multiple sections, each with own PMT

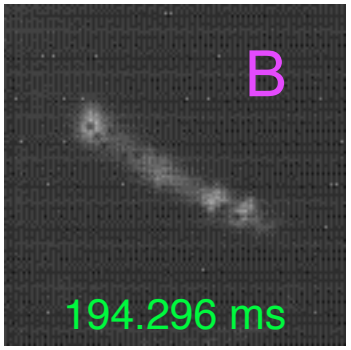
DSD XP 1: prompt NBI loss study

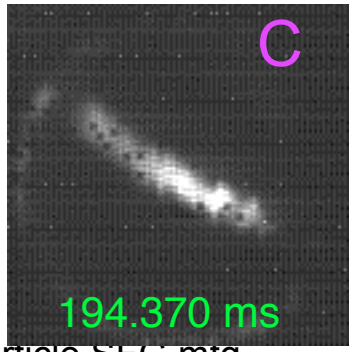
- Vary I_p (400, 600, & 800 kA)
- Vary R_{tan} of beam sources (A, B, C)
- Vary outer gap distance
- Blip or square wave modulate beams
- Measure prompt loss with sFLIP
- Also measure neutron rate, FIDA, NPA, SSNPA, etc.
- Use sFLIP data to test & improve prompt loss model for NSTX
- Also look for large CX loss in edge

DSD XP 2: Extend EPM burst study









DSD XP 2: EPM burst study

- Want internal mode structure data (SXR array, reflectometers) on all phases of burst
- Operate all fast ion diagnostics (sFLIP, neutrons, FIDA, NPA, SSNPA)
- Try to model fast ion transport with measured mode structures & amplitudes using GC orbit code, then compare with measurements
- Assess whether particle transport is really stochastic