

XP 905: Current profile modification & fast ion loss due from BAAEs/EPMs

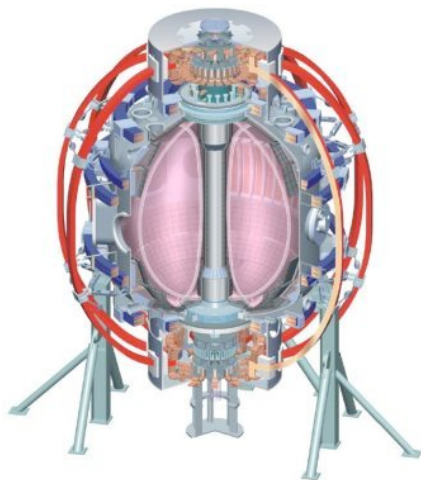
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Colorado Sch Mines
Columbia U
CompX
General Atomics
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New York U
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U Wisconsin

D. Darrow (PPPL)

E. Fredrickson, M. Podesta(UCI), N. Gorelenkov, H. Yuh
(Nova Photonics), S. Kubota (UCLA), J. Park(POSTECH), K.
C. Lee(UC Davis), R. Raman (UW), K. Tritz (JHU), and the

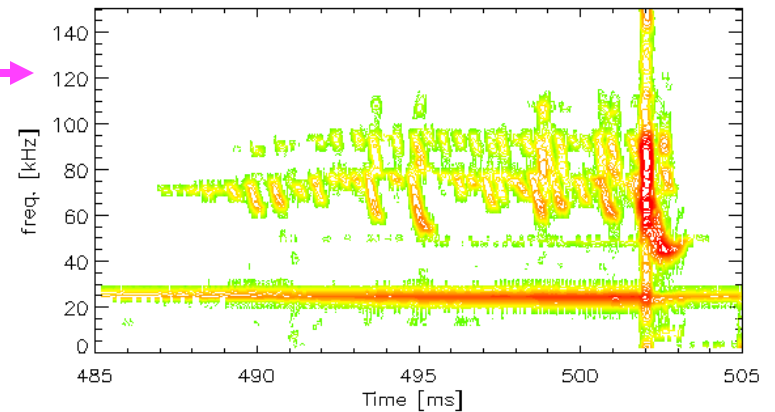
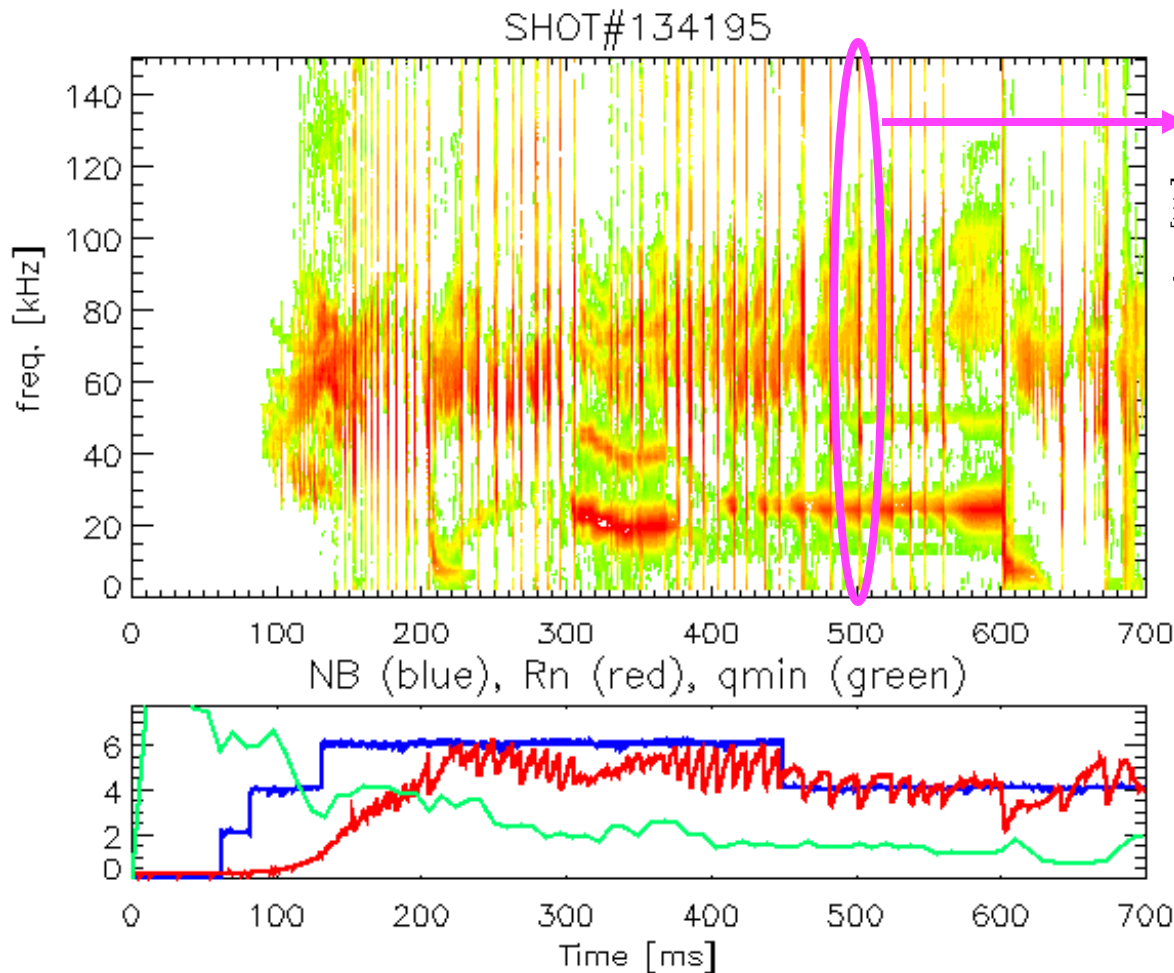
NSTX Research Team

NSTX 2009 Results Review
September 15, 2008



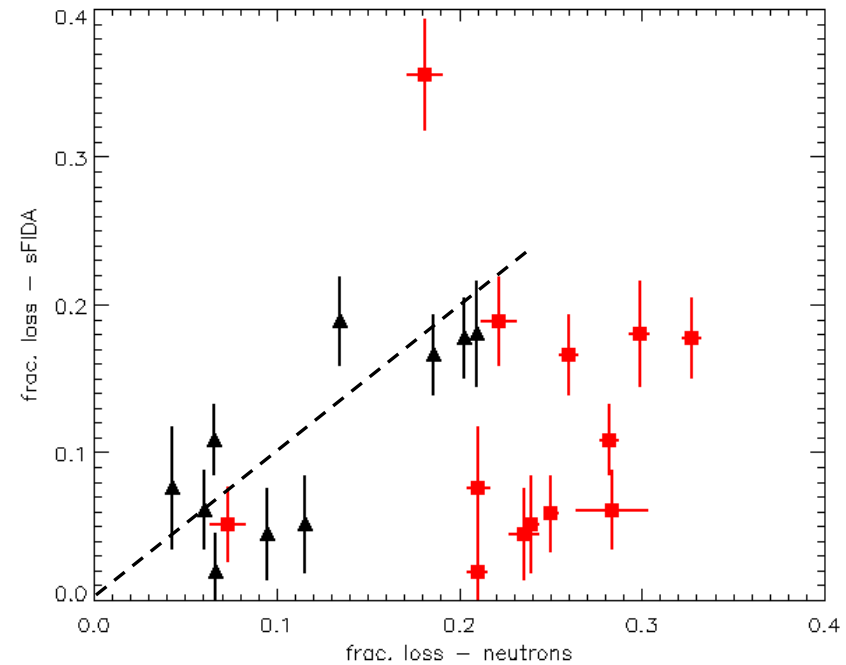
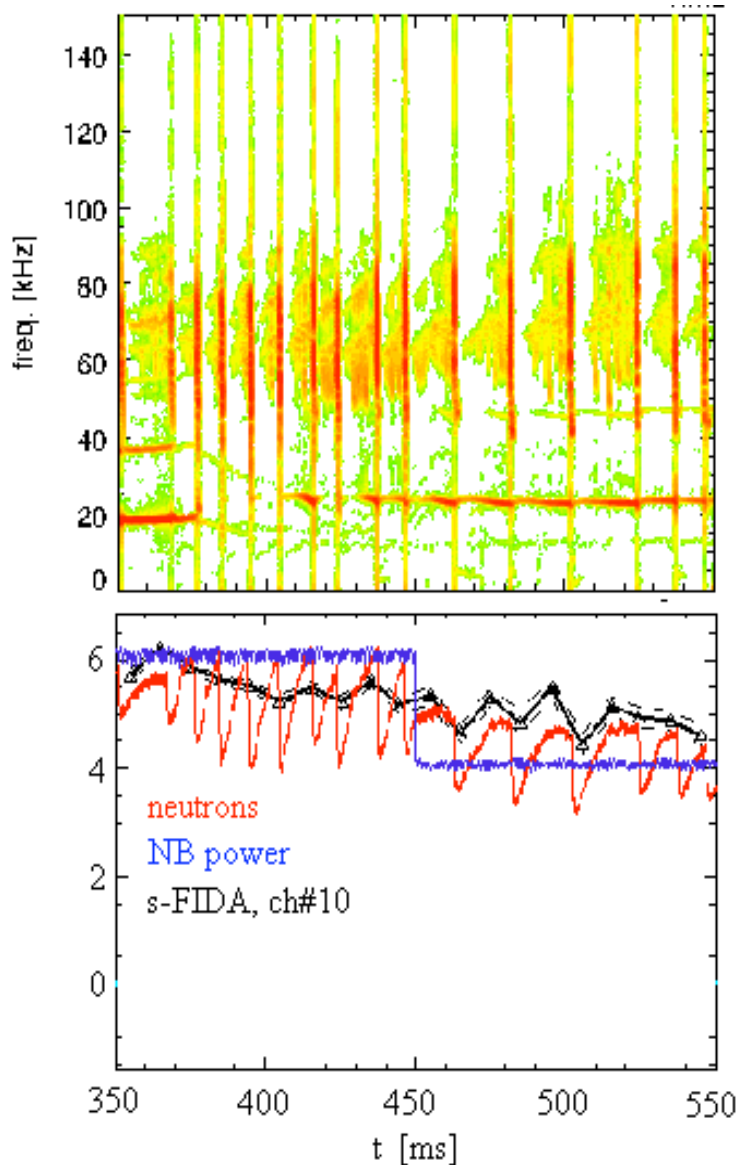
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IPP, Jülich
IPP, Garching
ASCR, Czech Rep
U Quebec

Repeated BAAE bursts seen



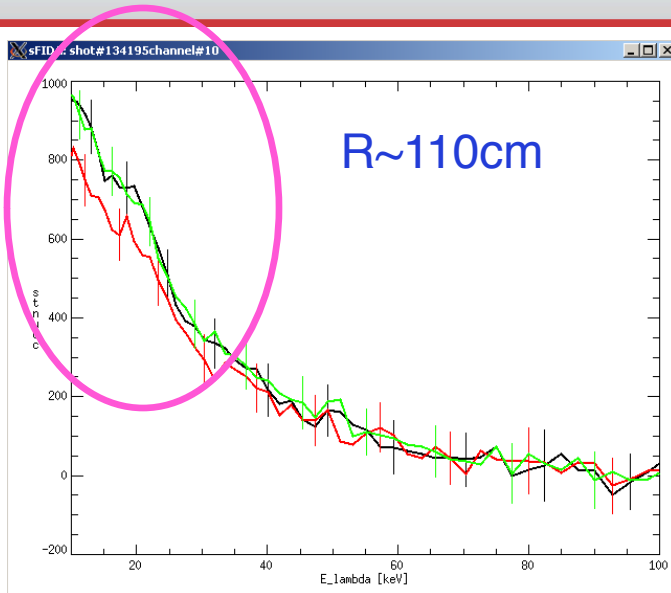
- Large neutron drops, $\Delta S_n = 36\%$
- Mode frequency chirps down

Confined beam ion density correlates well with neutron rate

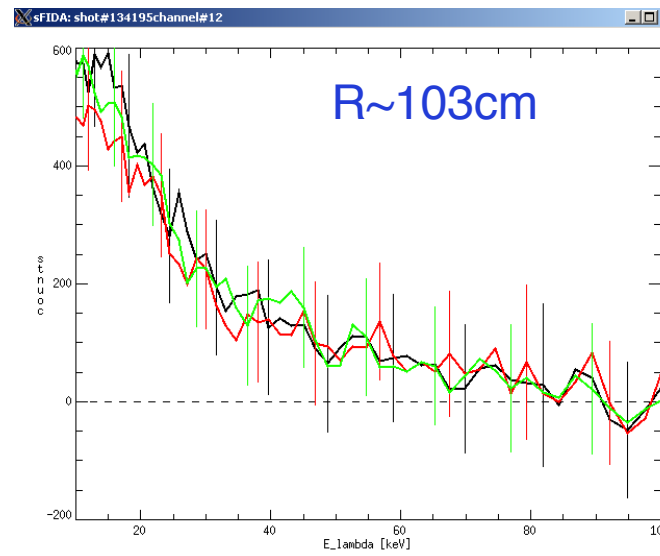
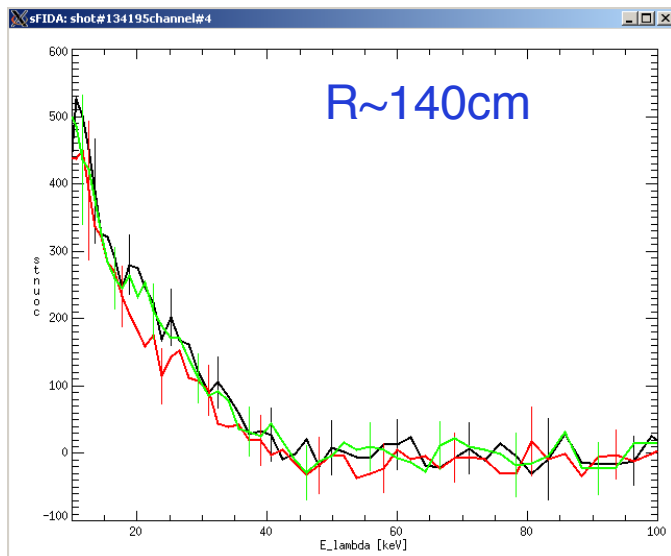


- Black: neutron data integrated on FIDA time base, showing good correlation
- Red: raw neutron data

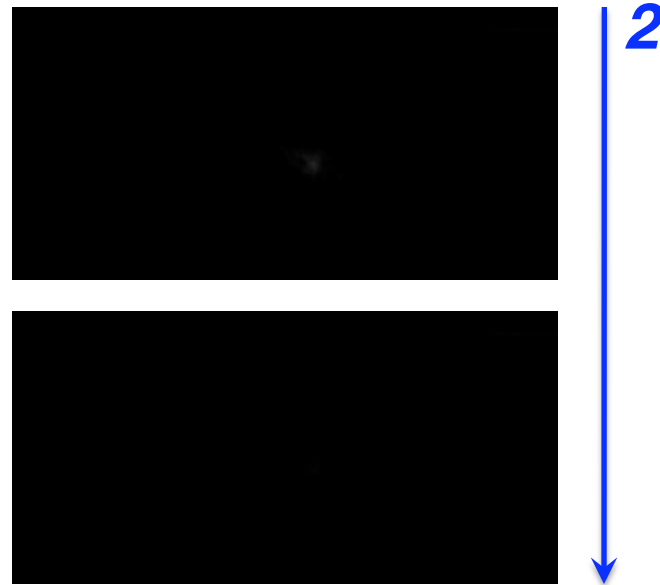
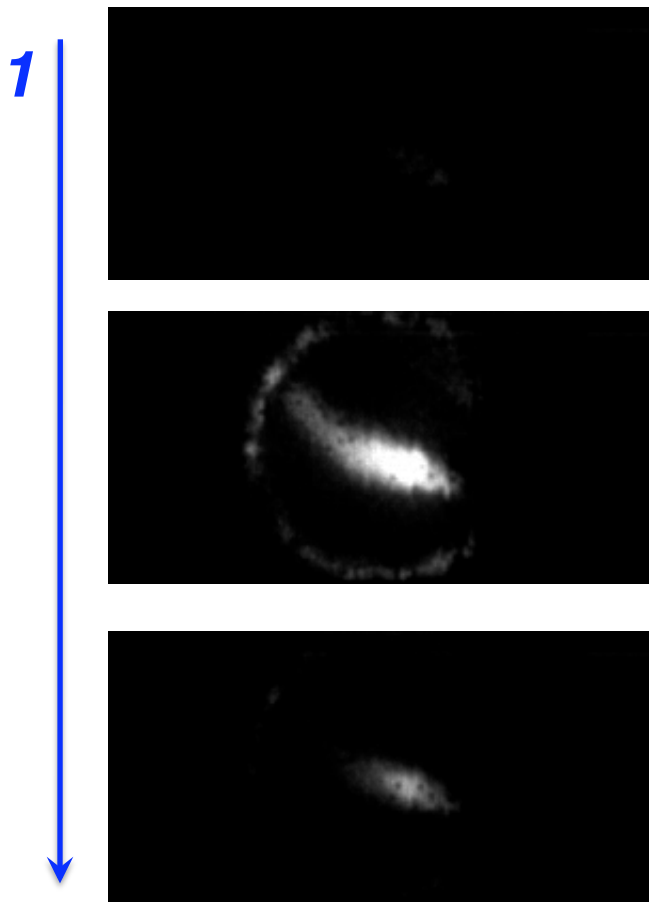
FIDA fast ion density drops at R~110-120 cm, but not at edge



- Drop at R~110 cm evident in this event at lower energies (central channels)
- Energy spectra away from this radius show no significant difference before vs after burst

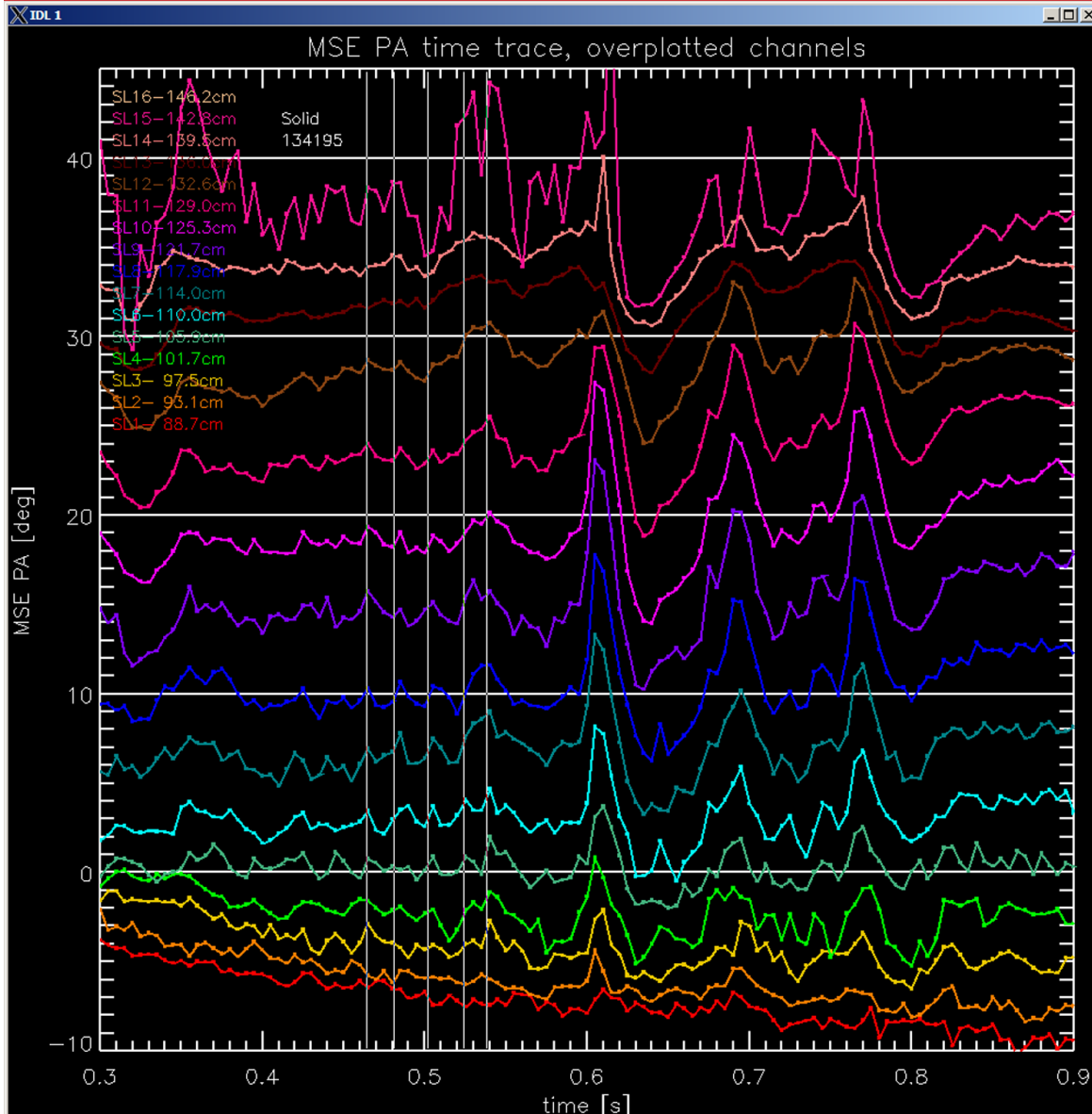


sFLIP shows fast ion loss takes $<100 \mu\text{s}$



- Successive sFLIP frames shown, 30,000 fps
- Loss arises & vanishes within 3 frames ($100 \mu\text{s}$)
- $>1/3$ of beam population lost during this short time!

Changes to $j(r)$ comparable to that from other modes



- MSE pitch angles shown vs time
- Leftmost vertical white line is event shown in previous slides
- Events at other times have effects of comparable magnitude to bursts in question