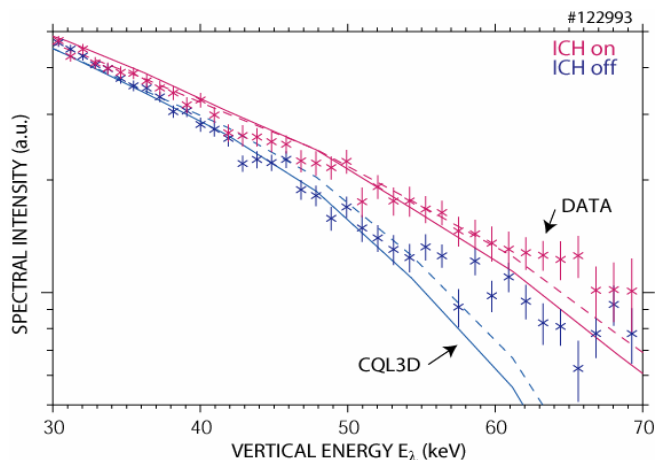
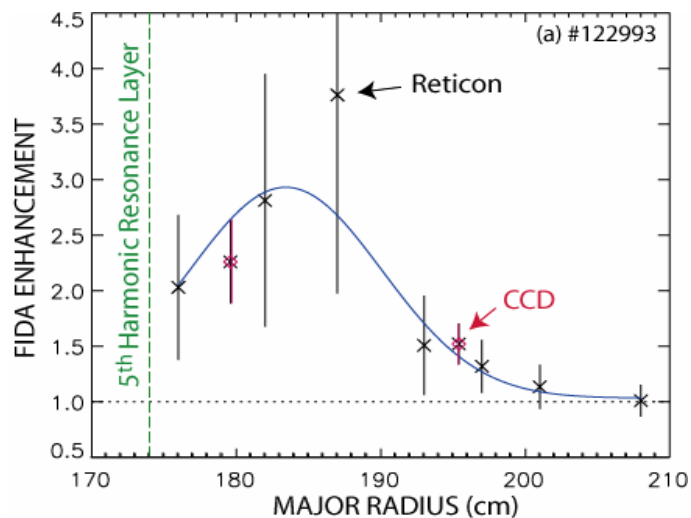


FIDA HHFW (XP 832)

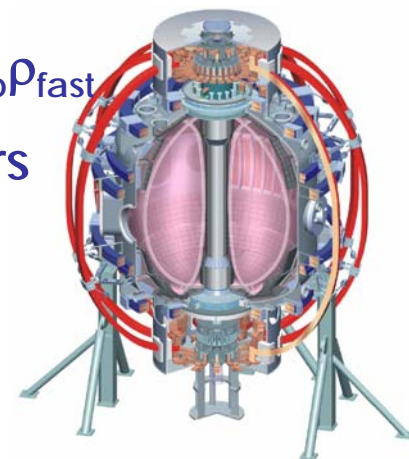
Profile of Fast Ions that are accelerated by HHFW



Goal: Use new FIDA diagnostic to measure the spatial profile of accelerated beam ions.

Motivation: NSTX is in a novel regime for fast-wave heating.

- Super-Alfvénic fast ions
- Very large values of $k_{\perp} \rho_{\text{fast}}$
- Multiple resonance layers



Resources/Shotlist

- 0.8 MA, 5.5 kG, 3-4 cm outer gap, L-mode (like 127403 but higher B_T)
- HHFW 14 m^{-1} , over 2 MW (on steady)
- Primary beam: Source C @ 65 kV (on steady except for one 10 ms notch)
- MSE beam: Source A (usually at end of time of interest)
- Essential diagnostics: FIDA, NPA, SSNPA, neutrons, Thomson

1a) Establish target condition with Source C and HHFW at $> 2 \text{ MW}$

1b) Substitute Source A for Source C to obtain MSE data at beginning of time of interest; also study variation of acceleration with injection velocity (1 shot)

1c) NPA vertical scan in #1a condition (4 shots)

1d) If not already achieved through faults, no HHFW baseline shot (1 shot)

1e) If not already achieved, 60% HHFW power shot (1 shot)

2) Lower B_T to 4.0 kG. Repeat previous steps as time permits.