

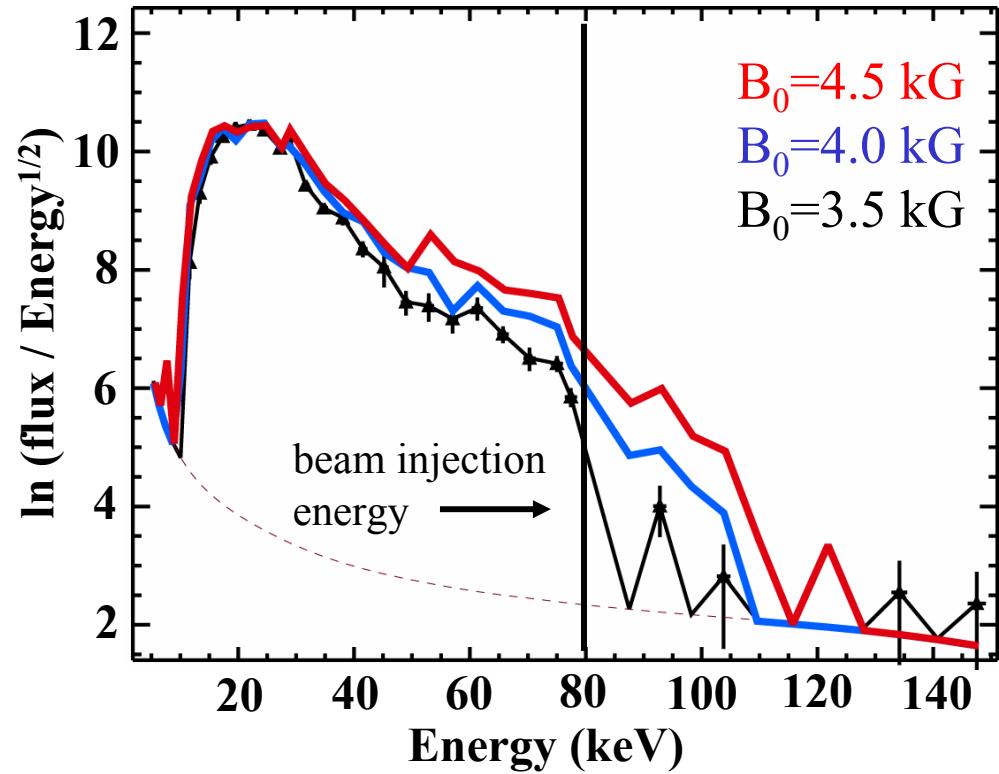
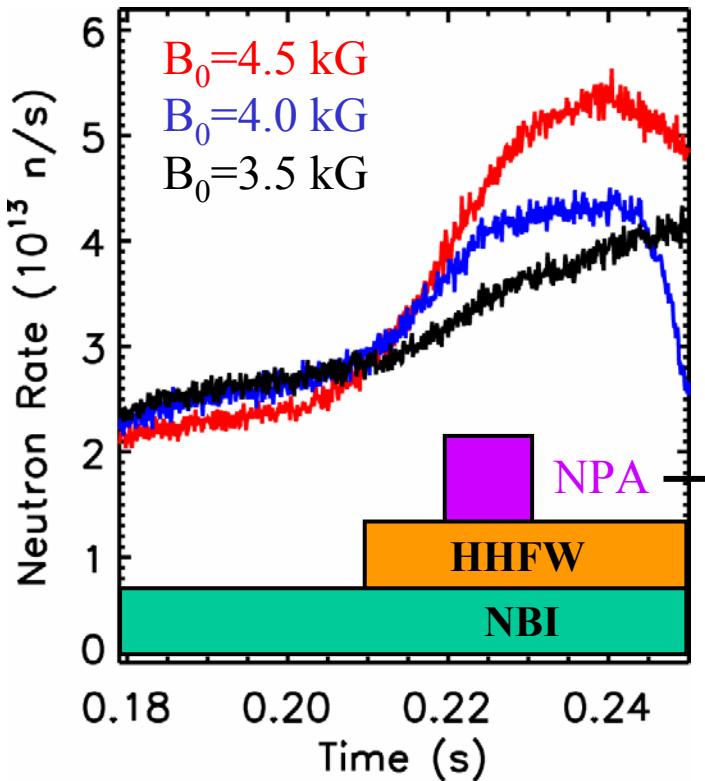
Fast Ion Absorption Dependence of HHFW on β and k_{\parallel} in NSTX

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NSTX XP Review

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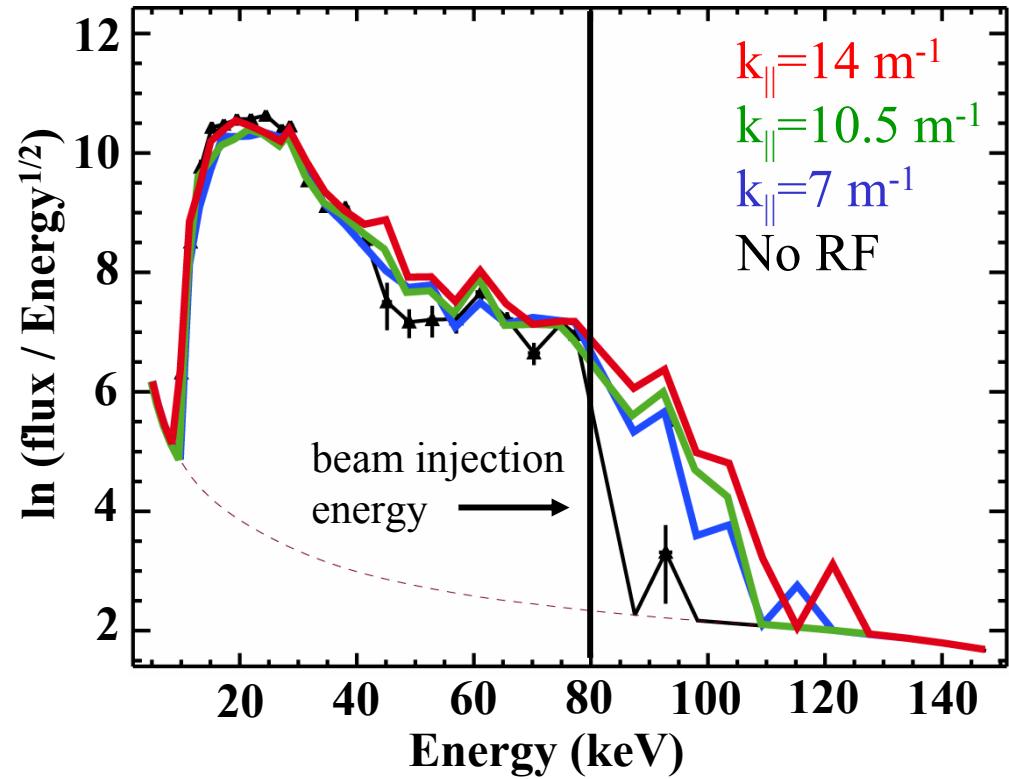
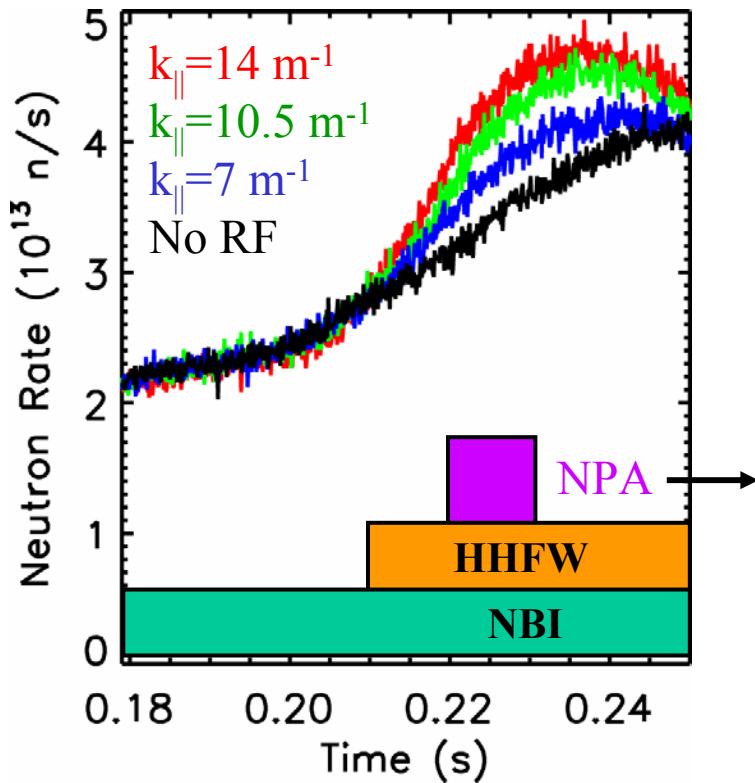
Tail reduced with lower B-field, higher β_t



- Larger β_t promotes greater off-axis electron absorption

k_{\parallel} has little observed effect on fast ions

NSTX

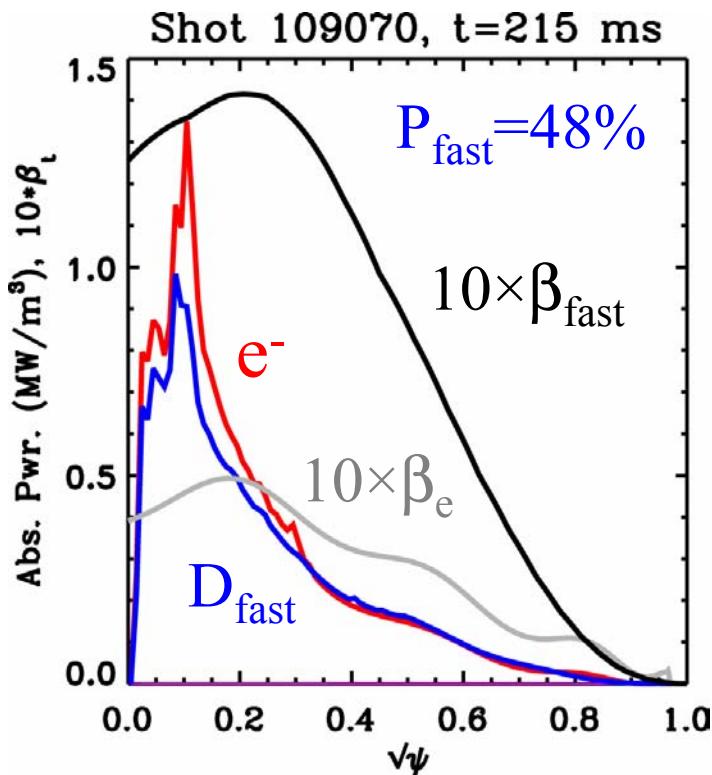


- Greater ion absorption predicted with lower k_{\parallel} , but surprisingly little variation in tail, small neutron enhancement with higher k_{\parallel}

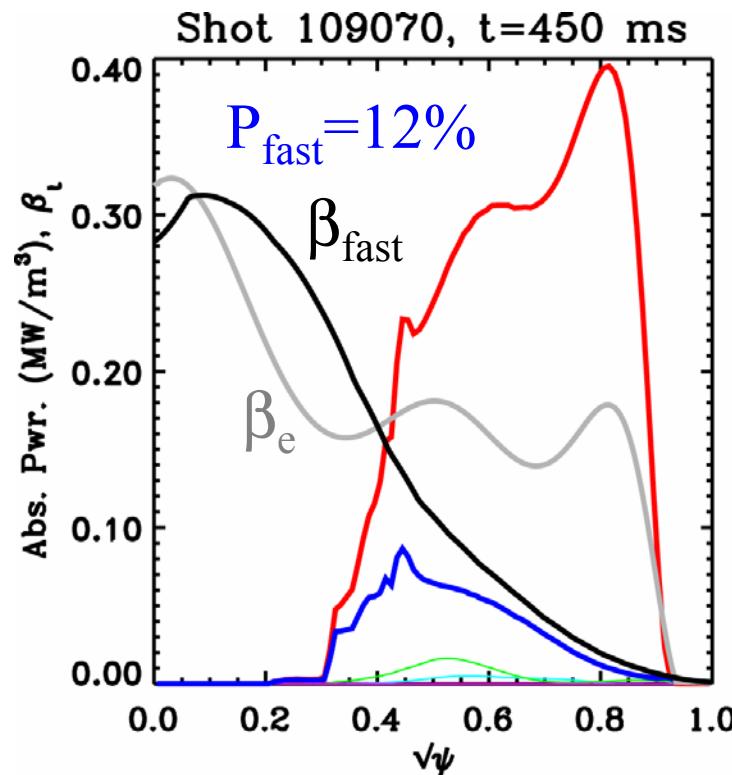
H-mode predicted to promote off-axis electron absorption



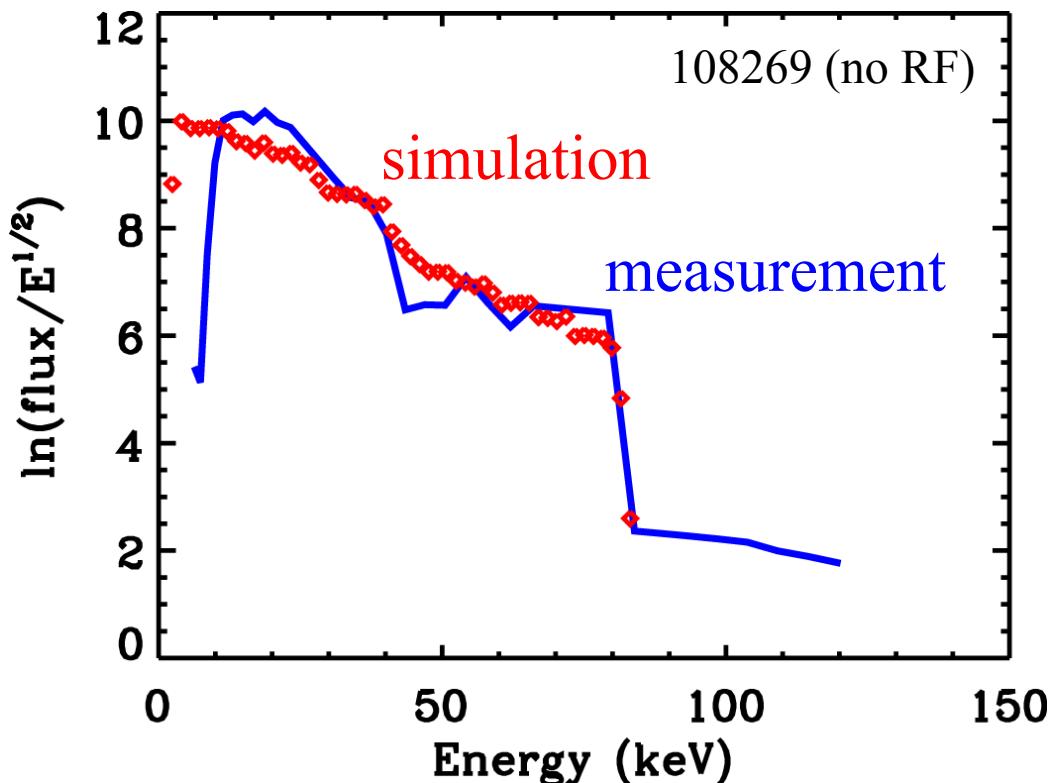
L-mode



H-mode



NPA Simulation of tail using TRANSP distribution function underway



- More data necessary to develop algorithm to simulate tail, determine change in distribution fct. due to RF

A Plan



- Determine ideal shot from earlier RF days
- β scans
 - Magnetic field
 - RF Power to change T_e
 - L-mode vs. H-mode
 - Density scan
 - Always scan NPA at $R_{tan}=100$ cm, 114 cm, & 128cm
- k_{\parallel} scan at hopefully higher power, T_e
- beam energy scan

Shot list (2 days, 28-35 shots)



DAY 1

- B-field scan (7 shots)
 - Shot 0: $B_0=4.5\text{kG}$, NPA scan (3 shots)
 - $B_0=4.0\text{kG}$ (1 shot)
 - $B_0=3.5\text{kG}$, NPA scan (3 shots)
- No RF scan (3 shots)
- L-mode vs. H-mode (3-6 shots)
 - Shot 0: H or L?
 - If H, puff Argon, NPA scan (3 shots)
 - If L, introduce 2nd beam, NPA scan, puff Argon, scan again (6)
- If more than 2 hours left (i.e. lottery win), do $k_{||}$ scan next, otherwise try RF Power scan

Shot list (Day 2)



- k_{\parallel} scan (7-9)
 - RF power at highest level, $k_{\parallel} = 14, 7, 3.5 \text{ m}^{-1}$ (if possible)
 - NPA scans at 14 and 7 m^{-1}
 - If 3.5 m^{-1} couples and there is time, also scan there
- RF Power scan (3)
 - If significant range available, NPA at 100 cm, high, low, mid power
- Density scan (1)
 - Attempt puffing more gas in
- Beam energy scan (4-6)
 - Return to shot 0
 - Beam A at 80 keV vs. B & C at 60 keV, NPA scans
 - If time, switch B and A instead