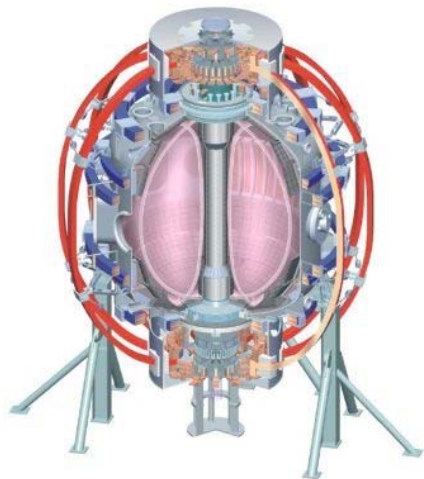


Assessment of core low-k turbulence and poloidal flow fluctuations

D. Smith, R. Fonck, and G. McKee
UW-Madison

2011 NSTX Research Forum
March 15-18, 2011



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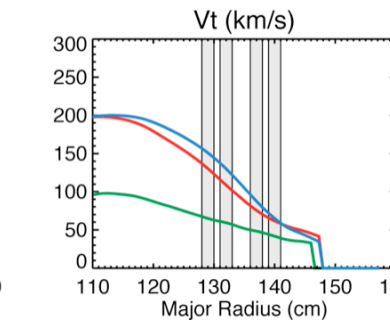
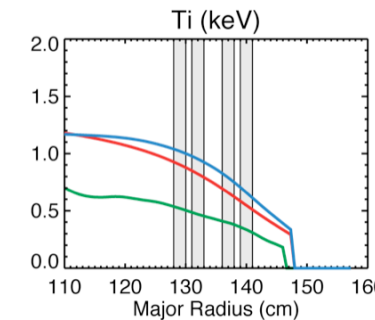
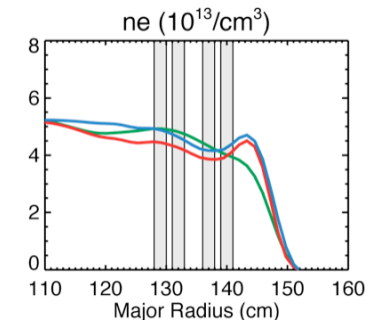
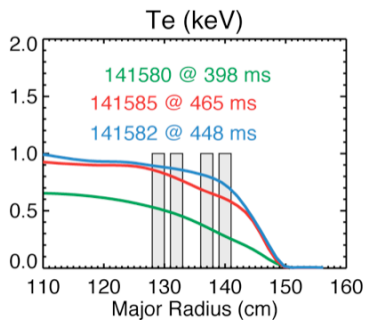
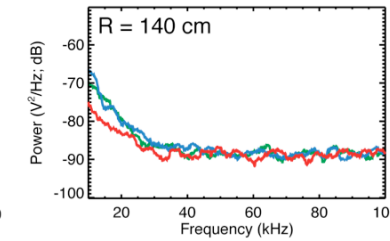
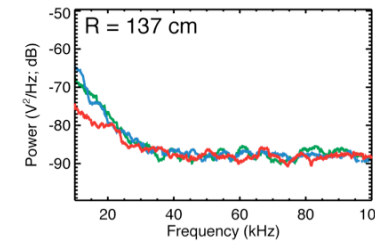
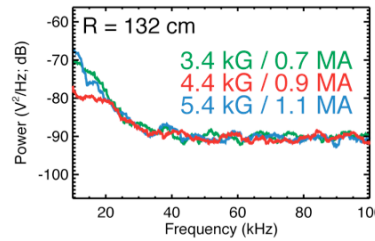
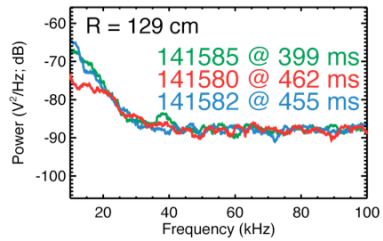
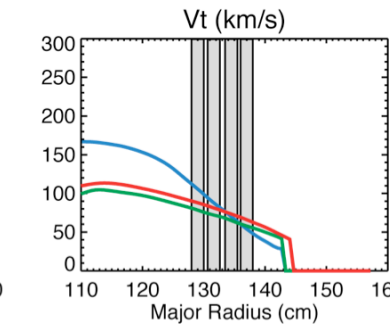
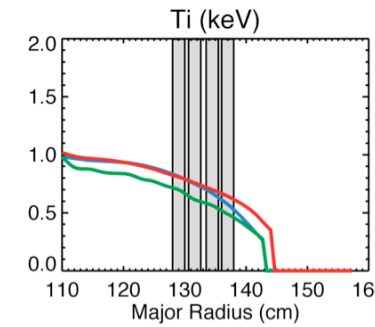
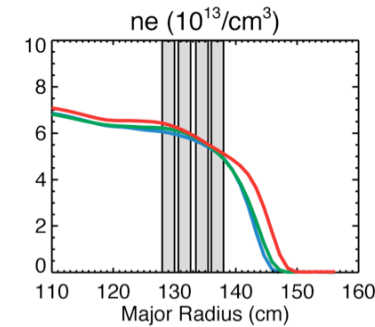
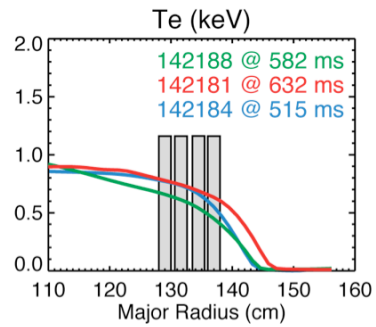
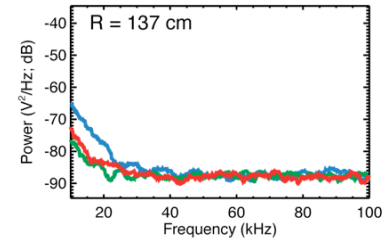
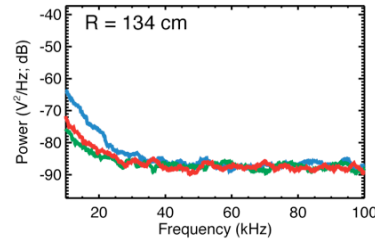
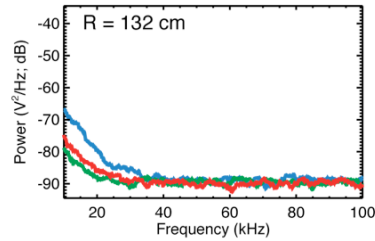
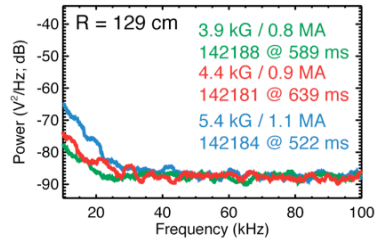
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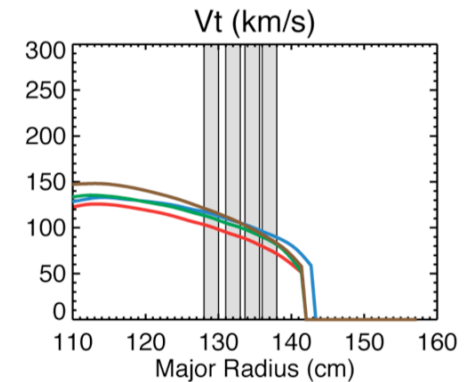
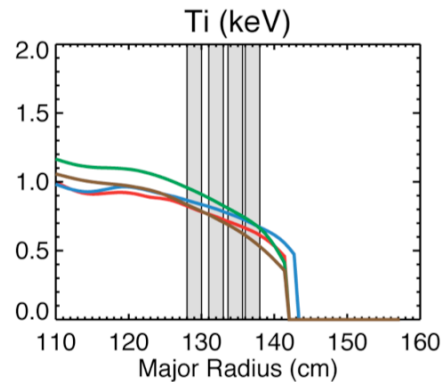
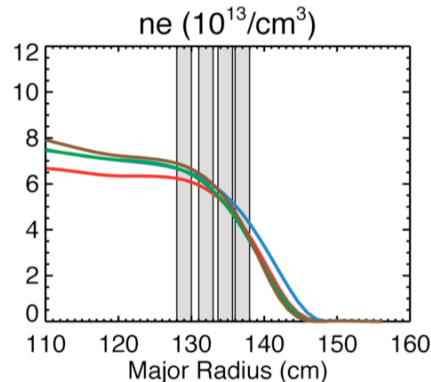
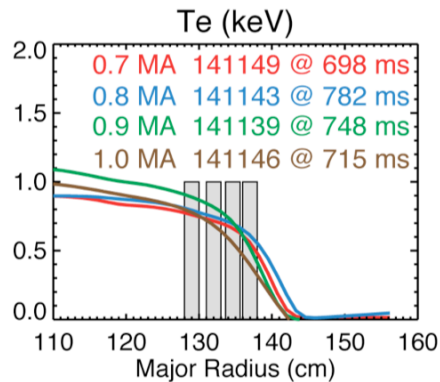
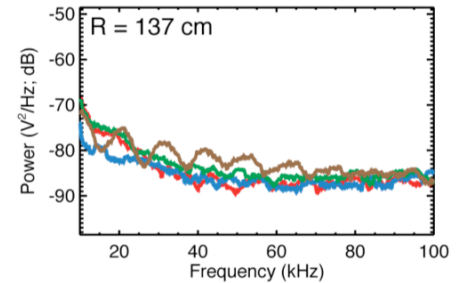
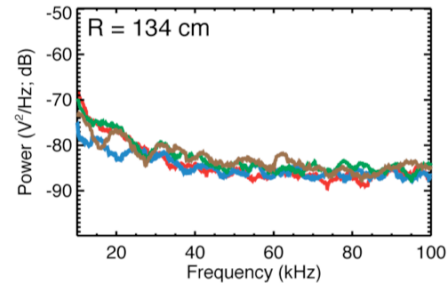
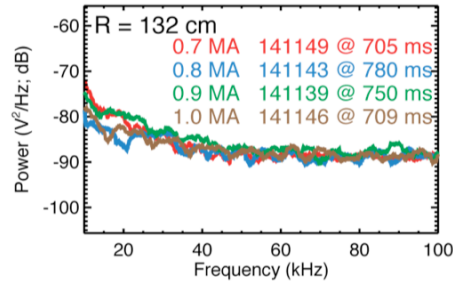
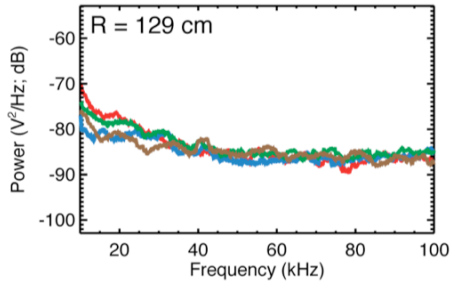
Assessment of core low-k turbulence and poloidal flow fluctuations

- Goal: Assess the relationship between low-k turbulence / poloidal flow fluctuations and core confinement
- Comprehensive BES coverage with core-to-edge radial arrays and extended core poloidal arrays
 - Measure radial and poloidal correlation lengths and poloidal flow fluctuations
- 2010 BES measurements will provide guidance for target discharge
- H-mode
 - I_p (q) scan \rightarrow I_p impacts ion transport and q impacts zonal flows
 - Collisionality ($|B|$) scan at fixed q_{95} (B_t/I_p) \rightarrow collisionality impacts confinement and may control transition from microtearing to ITG/TEM
- L-mode (HHFW+NB)
 - T_e/T_i scan \rightarrow large T_e/T_i is destabilizing for ITG turbulence
 - Z_{eff} scan with D, He, and He+impurity plasmas \rightarrow large Z_{eff} is stabilizing for ITG turbulence, but high-Z fuel is destabilizing (maybe modify for an H-mode Z_{eff} scan)
- 2 days – FY12 JRT; R(11-1)

Initial inspection of autopower spectra from 2010 |B| scans do not show clear trend



Initial inspection of autopower spectra from 2010 Ip scan does not show clear trend



Coherence and time-lag correlation analysis may reveal new insight

