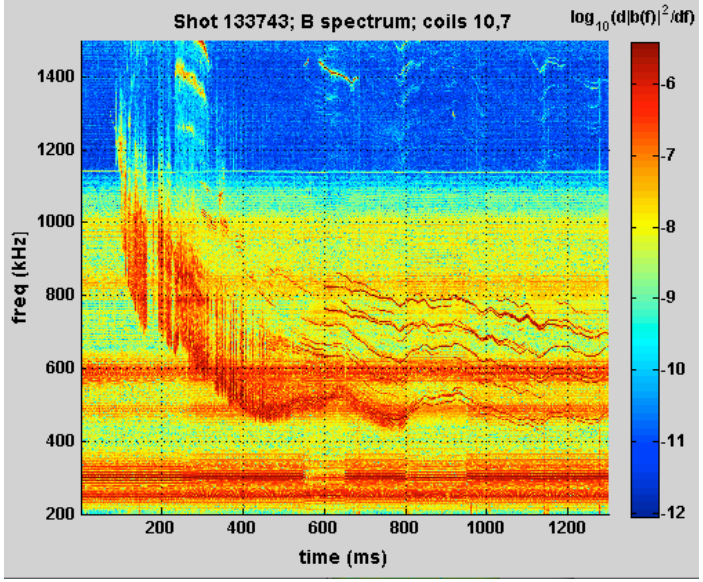
UCLA reflectometers provide radial array of δn measurements

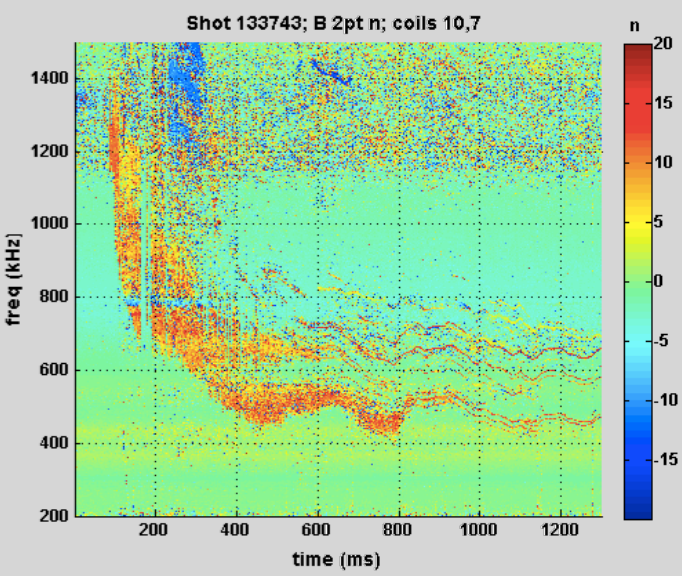
- Microwaves reflect from plasma at *cutoff*: $\omega^2 = \omega_p^2 \propto n$
- Reflectometers measure path length changes caused by density fluctuations (δn)
  - Microwaves launched radially in midplane: frequency array ⇒ radial array
  - Large array of frequencies:
    - –Q-band: 30, 32.5, 35, 37.5, 42.5, 45, 47.5 & 50 GHz
    - –V-band: 55, 57.5, 60, 62.5, 67.5, 70, 72.5 & 75 GHz
    - –W-band: 82, 83.3, 84.7 & 86 GHz
  - Large radial coverage in high density plasmas (n_0 ~ 1 – 9 x 10^{19} m^{-3})

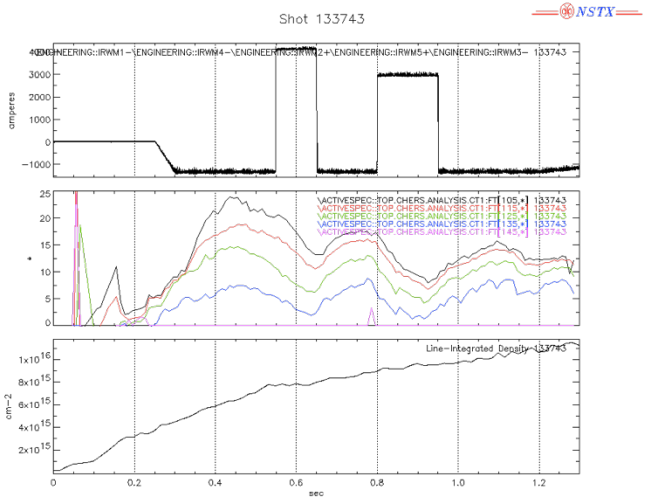
XP – Rotation effects on CAEs and GAEs

- CAE/GAEs potentially significant to core energy & fast-ion transport
  - predictive capability ultimately necessary
- Expect structure & frequency key factors in impact – sensitive to rotation
- Experiment: n=3 braking ⇒ rotation scan
  - measure structure & frequency
    - monotonic density profile for reflectometer array
  - 1/2 run day (1/4 minimum)
  - B_T scan and different NB sources is time permits
  - compare with simulation: HYM, CAE3B
- Furthers understanding of anomalous core energy transport:
  - R(15-1): Assess H-mode energy confinement .. with higher BT, Ip and NBI heating power
  - R(16-1): "Assess tauE … at low nu* with full confinement and diagnostic capabilities"

Backup


Shot 133743; B spectrum; coils 10,7
log10(d|b(f)|2/df)
freq (kHz)
time (ms)


Shot 133743; B 2pt n; coils 10,7
n
freq (kHz)
time (ms)


Shot 133743
NSTX
amperes
Line-Integrated Density 133743
cm-2
sec