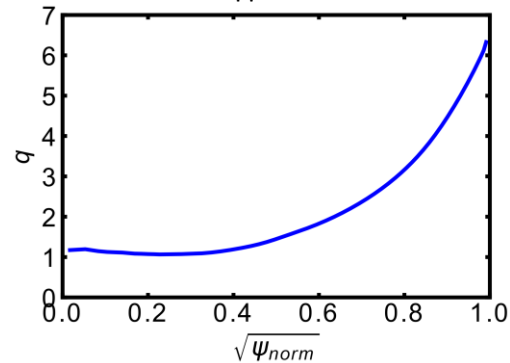
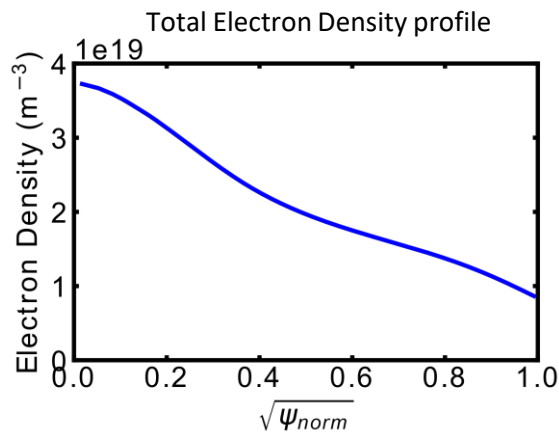
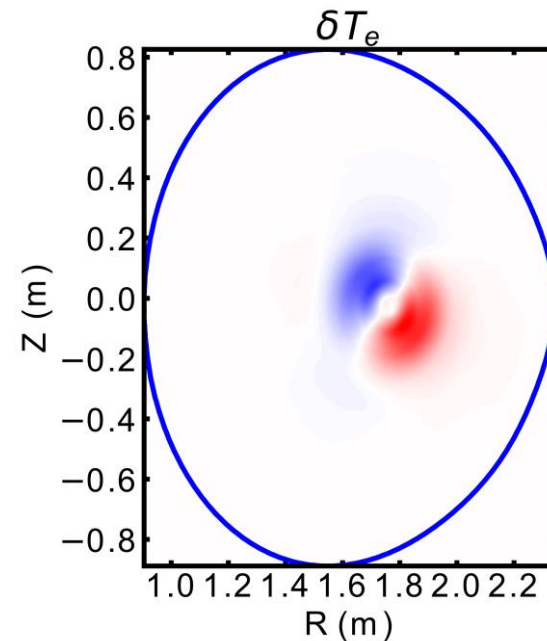
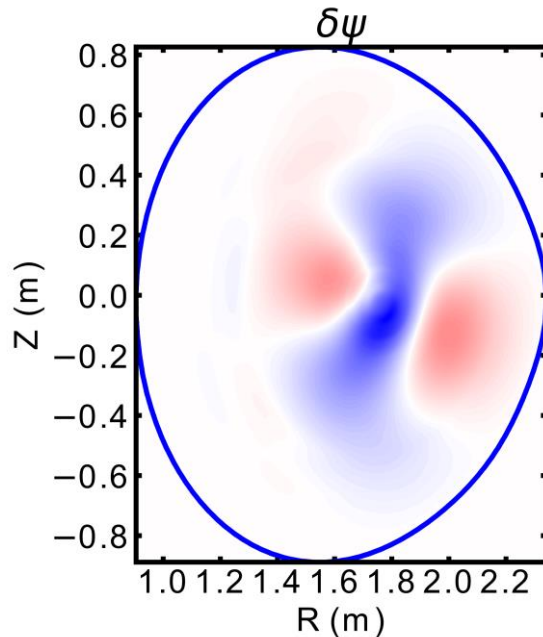
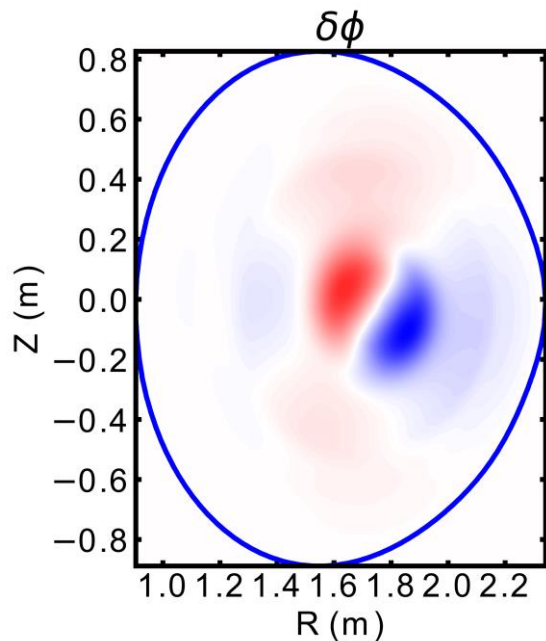


- $q_{min}=1.07$
- Plasma is deuterium dominant



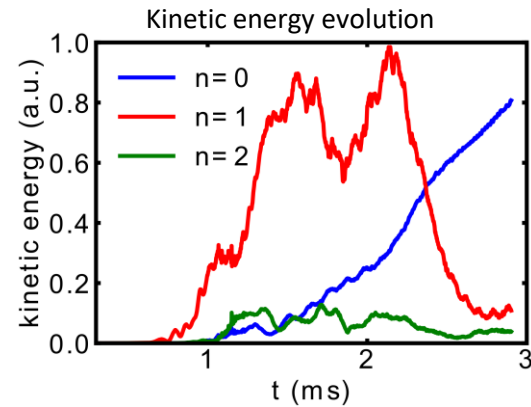
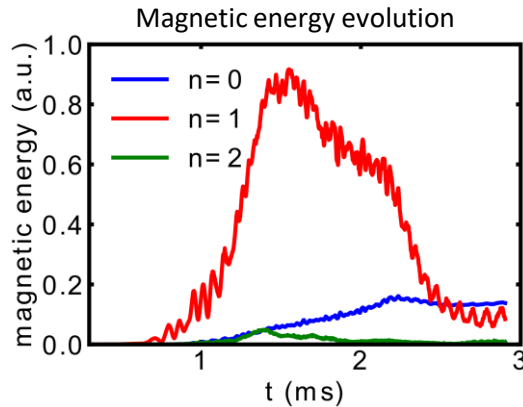


- Linear simulation with  $n=1$  (no rotation)
  - $\gamma=22131/s$   $\omega=24813$  Hz
  - Both  $m=1$  and  $m=2$  components show up



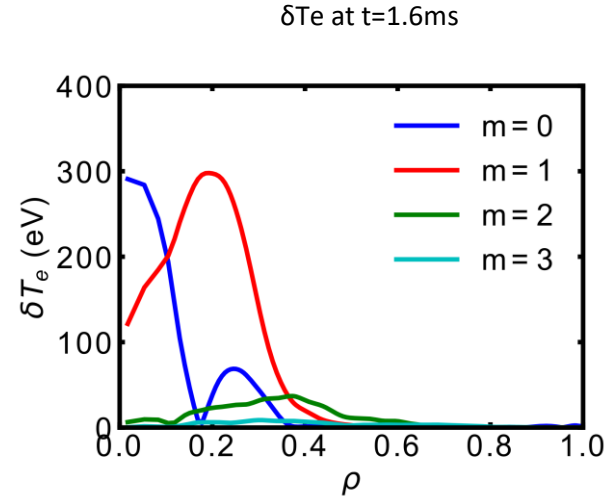
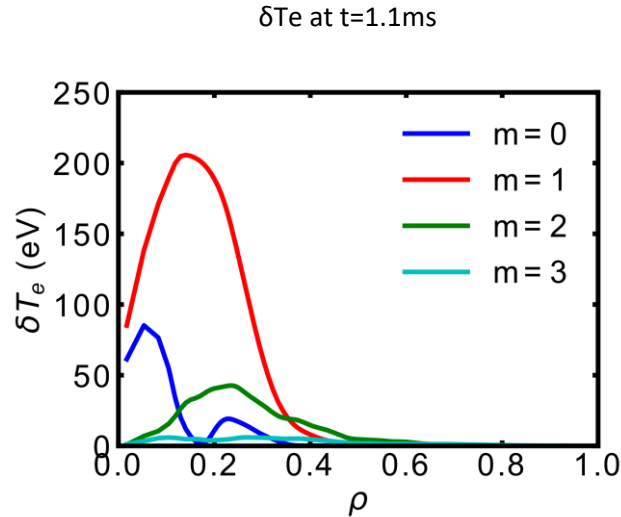


- We did nonlinear fishbone simulation with  $E_{\parallel}$ , including  $n=1$  and  $n=0$  toroidal modes.
- $n=1$  mode saturate at certain level
  - $n=0$  zonal flows and zonal fields are excited after saturation of  $n=1$  mode
  - Saturation  $\Delta B/B \sim 0.005$



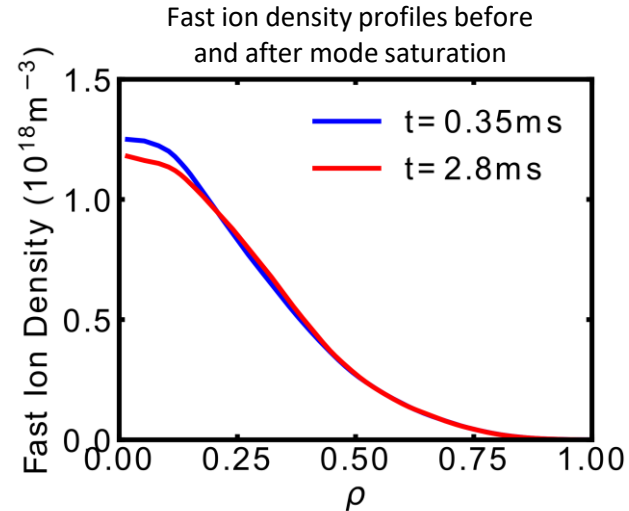
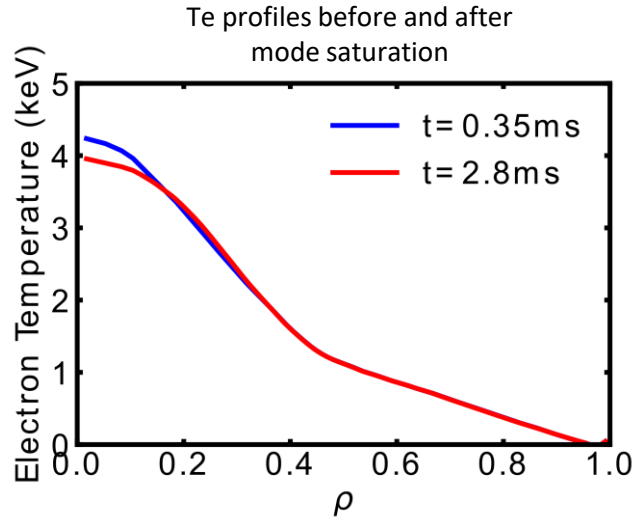


- The fishbone mode can lead to a (1,1) component of Te perturbation.
  - Saturation peak  $\delta T_e$  is 300eV, larger than the GTC and experiment.





- Te drops 6.6% after saturation compared to original one.
- EP density drops 5.6% after saturation compared to original one.





- Mode frequency chirps down after saturation.
  - The chirping rate is slower compared to GTC result, faster than experiment.

