Plasma profiles and EP distribution



• qmin=1.07

 Plasma is deuterium dominant Linear fishbone simulation with E_{\parallel} and Landau damping

- Linear simulation with n=1 (no rotation)
 - γ=22131/s ω=24813 Hz
 - Both m=1 and m=2 components show up



Nonlinear fishbone simulation

- 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 deltaB/B~0.005



Perturbation of electron temperature

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



Change of EP density profile

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



Frequency chirping after saturation

Time trace of delta-phi

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

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