



# A nonlinear simulation study of the effect of toroidal rotation on RMP control of ELMs – D Chandra, A Sen and A Thyagaraja

TH/2-2

- We have studied multiple ELM cycles in presence of toroidal rotation and RMP using 2-fluid CUTIE code that accounts for profile-turbulence cross-talk and self-consistent evolution of plasma gradients

**KEY RESULT: FLOW SYNERGISTICALLY HELPS RMP MITIGATION OF ELMS**

- A counter current off-axis sheared flow has the most synergistic impact on ELM mitigation
  - Beyond a certain strength of flow, the RMP effect is diminished by flow screening
  - Toroidal flow influences ELMs through a modification of the edge profiles by pushing the ELMs regions inwards and steepening the pressure gradient at that location thus adding to the RMP effect
  - The velocity shear also influences the stability of the peeling-ballooning modes
- Our finding could have interesting experimental consequences for ITER where small flows may aid RMP induced ELMs control in a synergistic fashion