TC-4: Species dependence of L-H threshold power Summary

- **Large amount of work performed on multiple devices since April, 2008, especially since last ITPA meeting**

- **H-mode power threshold**
  - **JET**: P_{th}(H)~ 2P_{th}(D) (1999); P_{th}(He)~ 1.4 P_{th}(D) (2001); P_{th}(He)~ 1.3 P_{th}(D) (2009 – preliminary); D-NBI, H-NBI, He-NBI, ICRH
  - **ASDEX Upgrade**: P_{th}(He)~ P_{th}(D) (2008); H-NBI, D-NBI, ECH
  - **MAST**: P_{th}(He)~ 1.4 P_{th}(D) (2009); D-NBI
  - **NSTX**: P_{th}(He)~ P_{th}(D) (2009); HHFW
  - **DIII-D**: P_{th}(H)~> 2P_{th}(D) (2008); P_{th}(He)~ 1.3-1.5 P_{th}(D) (2009); D-NBI, H-NBI, He-NBI, ECH
  - **C-Mod**: P_{th}(He)~ 1.2-1.8 P_{th}(D) (2009); ICRH

Summary

- **Confinement**
  - τ_E (H) ~ 0.6-0.9 τ_E (D)
  - τ_E (He) ~ 0.7-0.8 τ_E (D)
- **ELM power threshold**
  - **JET**: P (Type I) ~ 1.7-2.0 P (Type III)
- **H-mode power threshold affected by divertor geometry, applied torque, Icoil current (RMP perturbations).**

Plans

- Further experimental days planned on DIII-D and C-Mod
- Large amount of data obtained on multiple machines that now needs to be analyzed in detail
- ELM suppression in hydrogen and helium plasmas needs to be determined and documented – planned on DIII-D with H-NBI into He plasmas