L-H transition studies in JET: Tritium, Helium, Deuterium

- **RF heated** Tritium plasmas: dithers indicated that $P_{L-H}(T) > P_{L-H}(D)$ (preliminary)
  - New result at time of conference: **with NBI**, $P_{L-H}(T) < P_{L-H}(D)$, as expected
- Helium plasmas, comparison with Hydrogen, **Deuterium**:
  - Shifts in $n_{e,min}$: $\bar{n}_{e,min}(D) = 0.4\ f_{GW}$, $\bar{n}_{e,min}(H) = 0.5\ f_{GW}$, $\bar{n}_{e,min}(He) = 0.6\ f_{GW}$
  - Above $n_{e,min}$: $P_{LH}(He) = P_{LH}(D)$
  - L-H modelling D, He: collisional diffusion ~ Z^2 , smaller transport reduction in He
  - Observed high frequency Type I ELMs in Helium
- **Deuterium** plasmas:
  - Doppler reflectometry: E_r shear doesn't evolve along power ramp
  - Ion heat flux is not a linear function of density below $n_{e,min}$
  - Scaling laws for L-H power threshold in JET-ILW

- **Outlook:** further L-H transition studies in Tritium and DT planned in 2021

Emilia R. Solano and JET L-H transition team