

## P2.1093 Properties of microtearing turbulence in the H-mode pedestal

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See full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P2.1093.pdf>

Microtearing (MT) turbulence has been identified as a key player in the evolution of the Hmode pedestal due to its ability to produce electron thermal diffusivities very different from the ion heat and particle diffusivity channels [1]. However, important aspect of the physics of MT instability and turbulence under pedestal conditions are presently not well-understood.

Comparing between parameter points corresponding to JET-H-mode-like parameters as well as a core microtearing case [2], it is shown that much like ion-temperature-gradient-driven modes, the MT instability transitions from a toroidal branch to a slab-like branch. However, some of the central identifiers of MT are preserved across branches, such as mode parity and scaling with parameters such as the plasma pressure or the collision frequency.

Nonlinearly, zonal fields  $\neq$  in addition to zonal flows and densities  $\neq$  feature strongly in saturation, leading to significant variability in the electron heat flux. It is shown that the addition of external resonant magnetic perturbations acts differently on this turbulence type than it does on zonal-flow-regulated regimes [3].

Lastly, the impact of external ExB shearing as well as parallel flow shear on the MT turbulence is studied, and connections to pedestal evolution are established.

### References

- [1] D.R. Hatch et al., Nucl. Fusion 57, 036020 (2017)
- [2] H. Doerk et al., Phys. Rev. Lett. 106, 155003 (2011)
- [3] Z.R. Williams et al., Phys. Plasmas 24, 122309 (2017)

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