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Poloidally inhomogeneous electron temperature gradient turbulence in JET-ILW pedestals[1] J PARISI, F PARRA, Oxford, C ROACH, CCFE, M HARDMAN, M BARNES, Oxford, W DORLAND, Maryland, D HATCH, UT Austin, J BALL, EPFL, I ABEL, Maryland, B CHAPMAN, C GIROUD, J HILLESHEIM, CCFE, N AIBA, QST, JET CONTRIBUTORS, CCFE — Nonlinear electrostatic gyrokinetic simulations of electron temperature gradient (ETG) turbulence in JET-ILW pedestals reveal statistical inhomogeneity in poloidal angle, in stark contrast with core ETG turbulence. The heat flux and fluctuations are confined to a region centered at the outboard midplane, and fall off at a characteristic poloidal cutoff angle. The cutoff angle is determined by the local flux surface separation and the local variation of the magnetic shear. The nonlinear heat flux distribution does not follow simple quasilinear estimates, which suggested that toroidal ETG generated turbulence could carry significant heat flux [2]. However, the heat flux is dominated by turbulence caused by the slab ETG instability and is comparable to experimental observations. We discuss the implications of this statistically inhomogeneous turbulence for transport.

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[2]J. F. Parisi et al. Toroidal and slab ETG instability dominance in the linear spectrum of JET-ILW pedestals (Submitted). (2020)

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