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Numerical studies of multiscale electromagnetic electron-temperature-gradient turbulence LUCIO MILANESE, NUNO LOUREIRO, Massachusetts Institute of Technology, ALEXANDER SCHEKOCHIHIN, University of Oxford, WILLIAM DORLAND, Univ of Maryland-College Park — While relevant for transport in the tokamak pedestal, the dynamics and saturation mechanism of the slab branch of the electron-temperature-gradient (ETG) instability with full electromagnetic effects are not fully understood. We report on a set of novel multiscale, reduced-gyrokinetic (Zocco and Schekochihin, 2011) simulations of ETG turbulence in slab geometry. The exponential growth of linearly unstable modes ends in an initial, quasi-saturated state. During this stage, we observe the secular growth via nonlinear excitation of large-scale convective cells, which eventually dominate transport. In electromagnetic simulations, a strong magnetic zonal field is generated and dominates the dynamics. Details of the saturation mechanism are presented for the electrostatic and electromagnetic case.

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