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Saturation of Pedestal Electron Temperature Gradient Turbulence JUSTIN WALKER, DAVID HATCH, Institute for Fusion Studies, University of Texas at Austin — In H-mode tokamak plasmas, edge transport barriers facilitate better plasma confinement. A key question is the nature of the residual turbulent transport at play in the steep gradient region of the pedestal. Electron temperature gradient (ETG) driven turbulence is a major mechanism for electron heat transport in the pedestal. Here we present a study of these instabilities and their basic saturation properties in the nonlinear regime. Results from gyrokinetic simulations of electron temperature gradient instability (ETG) will be presented. Several branches of ETG modes coexist in the pedestal, often at the same wavenumbers. The role of these mode branches in the nonlinear turbulence will be discussed. In contrast to core plasmas, the nonlinear phase of the system has fewer characteristics of the most unstable linear mode and saturates via an inverse cascade of energy. Implications for quasilinear transport modeling will be discussed.

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