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Theory Experiment

Gyrokinetic Simulations of “ETG-Free” Discharges on DIII-D,* R.V. Bravenec, *Univ. of Texas at Austin*, T.L. Rhodes, *UCLA*, J. Candy, G.M. Staebler, and DIII-D Team, *General Atomics*, G.R. McKee, *Univ. of Wisconsin at Madison* – Existing gyrokinetic turbulence codes can not simultaneously treat “long-wavelength” microturbulence, *e.g.*, ion-temperature-gradient or trapped-electron modes; and short-wavelength turbulence, *e.g.*, electron-temperature-gradient (ETG) modes. Therefore, comparisons of gyrokinetic simulations with experiment are complicated when turbulence is present in the experiment over a broad wave-number range. ETG turbulence may enhance the electron thermal transport, and if the electrons and ions are collisionally coupled, also the ion thermal transport. We present linear and nonlinear gyrokinetic simulations, using the GKS [1] and GYRO [2] codes, as well as experimental results, from a discharge [3] which is believed to be absent ETG modes for a short time after deuterium pellet injection.

[1] M. Kotschenreuther, G. Rewoldt, and W.M. Tang, *Comput. Phys. Commun.* **88**, 128 (1995).

[2] J. Candy, *J. Comput. Phys.* **186**, 545 (2003).

[3] T.L. Rhodes, this session.

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