Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Linear and Nonlinear Studies of Trapped Electron Mode Turbulence[1] M. HOFFMAN, Univ. Missouri - Rolla, D.R. ERNST, MIT — Linear stability diagrams are presented to clarify the onset of toroidal drift modes, including ITG, and resonant and non-resonant TEMs, as a function of density and temperature gradients. Several hundred linear gyrokinetic stability analysis were performed with the GS2 code[2] to generate a stability diagram, varying density and temperature gradients around the "Cyclone Base Case." Two separate studies have previously found that zonal flows play very different roles in TEM turbulence. The first,[3] found that zonal flows play a strong role near threshold, where they produce a nonlinear upshift. The second,[4] for a case well above threshold, found that zonal flows have little effect on the turbulent saturation level. To better understand this behavior, we are performing a series of nonlinear gyrokinetic simulations to analyze the anisotropy of the turbulent eddies, and the role of zonal flows, as a function of drive.

[1]Work supported in part by U.S. Dept. of Energy National Undergraduate Fellowship Program.
[2]W. D. Dorland *et al.*, Phys. Rev. Lett. 85 (2000) 5579.
[3]D. R. Ernst *et al.* Phys. Plasmas 11(5) (2004) 2637. Also IAEA-CN-149/TH/1-3 (2006).
[4]T. Dannert *et al.* Phys. Plasmas 12 (2005) 072309.

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Date submitted: 20 Jul 2007 Electronic form version 1.4