Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Dilemma of Drift-Tearing Modes[1] V. ROYTERSHTEYN, B. COPPI, C. CRABTREE, MIT — The theory of the drift-tearing mode [1] predicts that in the presence of a realistic transverse electron temperature gradient the mode is stable due to the effects of electron Landau damping or parallel electron thermal conductivity in both collisionless [2] or weakly collisonal [3] regimes typical of modern day experiments on magnetically confined plasmas. The apparent contradiction of this result with the relevant experimental observations calls for consideration of effects outside the scope of conventional linear theory. A radial local "dip" in the longitudinal electron thermal conductivity has been shown to restore a significant mode growth rate [4]. A more drastic option is a local flattening of the radial electron temperature profile. We argue that the presence of background short-wavelength microturbulence, associated with Inhomogeneous Electron Temperature (IET) modes can increase the longitudinal "thermal resistivity" locally and lower the excitation threshold of drift-tearing modes. [1] B. Coppi, *Phys. Fluids*, **8** 2273 (1965); [2] B. Coppi *et al., Phys. Rev. Letters*, **42**, 1058 (1979); [3] J. Drake, *et al., Phys. Fluids*, **25**, 2509 (1983); [4] V.Roytershteyn *et al.* Paper P2-27, 2005 Sherwood Conference.

[1]Supported in part by the U.S. D.O.E.

Vadim Roytershteyn
MIT

Date submitted: 13 Jan 2006 Electronic form version 1.4