

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Documentation and Search for Missing Near Edge L-mode Transport¹ R.E. WALTZ, General Atomics, C. HOLLAND, UCSD — While GYRO simulations of the core ($0 < r/a < 0.7$) in typical DIII-D L-modes seems to be in good agreement with experiment, local GYRO simulated low- k ($k_\theta \rho_s < 1$) transport and turbulence intensity is about 5-fold lower than experimentally inferred levels in the near edge L-mode ($r/a = 0.7 - 0.95$) DIII-D shot 128913 [1]. Global slice GYRO simulations of this and other well-studied discharges [2] are presented here to further document the shortfall. TGLF transport simulations over a large L-mode database indicate this short fall is not atypical and L-modes easily transit to H-like profiles. High edge e-i collisionality stabilizes the TEM modes so that χ_e decreases like $T^{7/2}/n$ to the cold edge. The very high magnetic shear stabilizes the ITG despite the very high temperature gradient drive and high q . High- k ETG can make up for the shortfall in the electron but not the ion channel. Near edge L-mode transport is highly local. Artificially large edge damping of the zonal flows/GAMs helps only somewhat.

[1] C. Holland, A.E. White, et al., Phys. Plasmas **16**, 052301 (2009).

[2] R.E. Waltz, et al., Phys. Plasmas **13**, 072304 (2006).

¹Work supported by US DOE under DE-FG02-95ER54309 and DE-FG02-07ER54917.

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Date submitted: 26 Jul 2011

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