Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Development of electron thermal transport model in DIII-D discharges T. RAFIQ, A.Y. PANKIN, G. BATEMAN, A.H. KRITZ, F.D. HALPERN, Lehigh U., J.D. CALLEN, U. Wisconsin — The electron thermal transport in tokamak plasmas is investigated with predictive integrated modeling simulations using a choice of different electron thermal transport models. Two models for transport driven by Electron Temperature Gradient (ETG) modes are considered: (1) the ETG part of the GLF23 transport model; and (2) the Horton model for the the electromagnetic part of the ETG anomalous transport [1]. These models are combined with the paleoclassical model [2] for electron thermal transport. ASTRA predictive simulation results obtained using these models are compared with one another and compared with experimental data from DIII-D H-mode discharges in an effort to discriminate among the models. It is found that the electromagnetic limit of the Horton model is important near the magnetic axis where the ETG mode in the GLF23 model is below threshold. The paleoclassical model is found to be needed to produce the observed edge pedestal in the DIII-D simulations.
[1] W. Horton, B. G. Hong, and W. M. Tang,
Phys. Fluids 31, 2971 (1988).
[2] J. D. Callen, Nucl. Fusion 45, 1120 (2005).

G. Bateman
Lehigh U.

Date submitted: 18 Jul 2008 Electronic form version 1.4