Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Interaction of 2/1 Neoclassical Tearing Modes, Turbulence and Thermal Transport in the DIII-D Tokamak[1] L. BARDOCZI, T.L. RHODES, T.A. CARTER, A. BANON-NAVARRO, N.A. CROCKER, W.A. PEEBLES, F. JENKO, UCLA, G. MCKEE, U. Wisc-Madison — The interaction of neoclassical tearing modes (NTM), turbulence and transport has received increased attention, e.g. magnetic islands are predicted to modify turbulence that in turn affects cross-field transport ($\chi_\perp$) and NTM stability [1]. We present two non-perturbative experimental approaches to examine the problem: (i) Comparison of measured electron temperature to anisotropic heat transport models employing spatially non-uniform $\chi_\perp$ shows reduction of anomalous $\chi_\perp$ at the O-point. (ii) Far Infrared Scattering and Beam Emission Spectroscopy measurements are consistent with density fluctuation amplitude being modified by the NTM while GENE linear gyrokinetic simulations show that these density fluctuations are driven by ion temperature gradient turbulence. This study suggests an interesting correlation between the reduction of turbulence and anomalous transport across the island.

[1] Wilson and Connor, PPCF 51 115007 (2009).

[1]Supported by US DOE under DE-FG03-01ER54615, DE-FG02-89ER53296, and DE-FC02-04ER54698.

L. Bardoczi
UCLA

Date submitted: 23 Jul 2015 Electronic form version 1.4