Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Time Dependent Predictive Modeling of DIII-D ITER Baseline Scenario using Predictive TRANSP[1] B.A. GRIERSON, R.G. ANDRE, R.V. BUDNY, W.M. SOLOMON, X. YUAN, PPPL, J. CANDY, R.I. PINSKER, G.M. STAEBLER, GA, C. HOLLAND, UCSD, T. RAFIQ, Lehigh U. — ITER baseline scenario discharges on DIII-D are modeled with TGLF and MMM transitioning from combined ECH (3.3MW)+NBI(2.8MW) heating to NBI only (3.0 MW) heating maintaining $\beta_{\rm N}$ =2.0 on DIII-D predicting temperature, density and rotation for comparison to experimental measurements. These models capture the reduction of confinement associated with direct electron heating H_{98y2} =0.89 vs. 1.0) consistent with stiff electron transport. Reasonable agreement between experimental and modeled temperature profiles is achieved for both heating methods, whereas density and momentum predictions differ significantly. Transport fluxes from TGLF indicate that on DIII-D the electron energy flux has reached a transition from low-k to high-k turbulence with more stiff high-k transport that inhibits an increase in core electron stored energy with additional electron heating. Projections to ITER also indicate high electron stiffness.

[1]Supported by US DOE DE-AC02-09CH11466, DE-FC02-04ER54698, DE-FG02-07ER54917, DE-FG02-92-ER54141.

B.A. Grierson
Princeton Plasma Physics Laboratory

Date submitted: 20 Jul 2015 Electronic form version 1.4