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[**x**] Theory [ ] Experiment

Transport Stiffness of TGLF and Its Impact on ITER,* J.E. Kinsey, G.M. Staebler, R.E. Waltz, K.H. Burrell, C.C. Petty, *General Atomics*; C. Holland, *UCSD* – The TGLF Gyro-Landau-Fluid transport model has been successful in reproducing the observed density and temperature profiles in a wide variety of tokamak discharges from DIII-D, JET and TFTR. Recently, it was shown that the predicted fusion gain for ITER using TGLF is somewhat more pessimistic than previous GLF23 results due to finite aspect ratio effects that are only present in TGLF. A key ingredient in the TGLF predictions of ITER is profile stiffness. A consequence of the stiff core transport is that the fusion gain scales like $\beta_{\rm ped}^2$ and like $1/P_{\rm aux}$ at fixed $\beta_{\rm ped}$. Since stiff core transport has an important role in our ITER predictions we seek to quantify the stiffness of TGLF. Stiffness (S) is defined as the ratio of the incremental energy diffusivity to the power balance energy diffusivity. To date, we find S ~ 10 is typical in the plasma core and drops to less than 3 in the near edge region. The electron and ion stiffness is examined in recent DIII-D experiments and in previous L- and H-mode similarity discharges.

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