Abstract Submitted
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Gyrokinetic Transport Database and Comparisons to the TGLF Theory-Based Transport Model,[1] J.E. KINSEY, Lehigh U., G.M. STAEBLER, R.E. WALTZ, J. CANDY, GA — A database with over 300 nonlinear gyrokinetic simulations has been created using the GYRO code [1,2]. Using a parameterized equilibrium model for shaped geometry, simulations show that the GYRO normalized ITG/TEM diffusivities exhibit an inverse linear dependence on elongation at fixed midplane minor radius. Kinetic electron simulations show the ExB shear quench rule is robust in shifted circle geometry. With real geometry, the quench point varies systematically with elongation and aspect ratio. Using the results, a new version of the quench rule is found that captures the variation of the quench point with these two geometric quantities. Finally, we compare the results from the TGLF driftwave model [3] with the GYRO simulations. Using the TGLF eigenmodes, we compute quasilinear fluxes using a turbulence saturation model and assess the quality of the fit to the GYRO transport database.

[1] J. Candy, R.E. Waltz, Phys. Rev. Lett. **91**, 45001 (2003).
[2] http://fusion.gat.com/comp/parallel
[3] G.M. Staebler, J.E. Kinsey, R.E. Waltz, Phys. Plasmas **12**, 102508 (2005).

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