

Abstract Submitted
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Hybrid TGLF-GYRO Steady-State Transport Calculations with TGYRO¹ J. CANDY, R.E. WALTZ, General Atomics, M. FAHEY, ORNL — We report on the status and development of TGYRO, a steady-state transport manager which enables GYRO [1] to be used for steady-state transport calculations. This project is partner to the larger FACETS SciDAC project. Currently, TGYRO has two distinct operational modes: a **local** and a **global** mode. In this presentation we focus on the local mode only, for which a Newton-type iterative scheme is applied to local transport flux computations, including GYRO gyrokinetic simulations. Iteration continues until the turbulent fluxes match target fluxes determined by (a) self-consistent thermonuclear sources, radiation, exchange, etc., or (b) imposed target fluxes derived from experimental power balance. This approach makes significant use of the TGLF [2] transport model. In this presentation we will discuss the success and limitations of the iterative solver as applied to GYRO simulations, and the use of hybrid TGLF-GYRO flux calculations to enhance robustness and speed convergence of the method.

[1] J. Candy, R.E. Waltz, J. Comput. Phys. 186, 545 (2003).

[2] J.E. Kinsey, et al., Phys. Plasmas 15, 055908 (2008).

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