Abstract Submitted
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A Gyrokinetic Benchmarking of Electron Temperature Gradient Turbulence[1] W.M. NEVINS, LLNL, J. CANDY, GA, S. COWLEY, UCLA, T. DANNERT, IPP Garching, A. DIMITS, LLNL, W. DORLAND, U of MD, C. ESTRADA-MILA, GA, G.W. HAMMETT, PPPL, F. JENKO, IPP Garching, D. SHUMAKER, LLNL — A suitable operating point for benchmarking numerical simulations of electron temperature gradient (ETG) turbulence is presented together with a linear analysis of the unstable ETG modes at this operating point. Convergence studies in time step, spatial grid, and velocity-space resolution demonstrate well-converged results from both continuum and particle-in-cell gyrokinetic simulations codes at the chosen benchmark point. Simulation results from four gyrokinetic simulations codes demonstrate excellent agreement ($\pm 10\%$) in the electron heat flux. Comparison of potential fluctuations between these codes demonstrates similar agreement in the correlation functions, spectral density, and *rms* flow shear due to the self-generated zonal flows. A parameter scan in which the magnetic shear, s, is varied reveals dramatic increase in both the ETG turbulent intensity and the transport as the magnetic shear is increased from $s = 0.3$ to $s = 0.4$.

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