Convergence Study of Long-Term ITG Turbulence Simulations with the GTC Code

S. ETHIER, W.W. LEE, W.M. TANG, Princeton Plasma Physics Laboratory — The 3D gyrokinetic particle-in-cell code GTC has been successfully employed in studying microturbulence in toroidal fusion devices for several years now [1]. Recently, new GTC simulations of ITG turbulence using the adiabatic electron approximation but including the usually ignored ion velocity-space nonlinearity showed a faster evolution towards steady-state than the original simulations without this extra term [2]. In this work, several simulations of this type are carried out to assess the convergence of the steady-state transport for an increasing number of particles at a fixed device size. The resulting ion thermal conductivity, entropy production, and perturbed velocity-space distribution will be presented.


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