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Progress on long-time kinetic simulation of tokamak turbulence with very weak dissipation SCOTT PARKER, YANG CHEN, JASON KAHUT, University of Colorado, Boulder — Recent progress on convergence studies of long-time simulations for both electron-temperature-gradient (ETG) and ion-temperature-gradient driven microturbulence will be reported. It was surprising to us to find that low-noise ETG turbulence simulations are well-converged with rather modest particle number (30-70 million particles). Progress on the particle-continuum method [Vadlamani et al., *Comp. Phys. Comm.*, 209 **164** (2004)] will also be reported. The particle-continuum method is really a general class of a variety of methods and has been shown to solve the so-called "growing weight problem" in two-dimensional simulations. The method is implemented in four-dimensions with the $\mu\nabla B$ force neglected. In this case, $v_{\|}$ is a constant of motion and resetting of the particle δf on a four-dimensional grid is more reasonable. Discussion of issues related to applying particle continuum method in five dimensions will also be presented. Work supported by DOE SciDAC Gyrokinetic Particle Simulation Center and Center for Plasma Edge Simulation.

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