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Nonlinear Gyrokinetic Turbulence Simulations of the NSTX Spherical Torus J.L. PETERSON, G.W. HAMMETT, D. MIKKELSEN, S. KAYE, Princeton Plasma Physics Laboratory, J. CANDY, R.E. WALTZ, General Atomics — Recent progress in the numerical simulation of plasma turbulence has led to a greater understanding of the mechanisms behind anomalous heat and particle losses in tokamaks. However, the source of turbulent transport in machines with smaller aspect ratios, such as the National Spherical Torus Experiment (NSTX), remains elusive. Leading contenders for explaining transport in spherical tori include turbulence driven by the Electron Temperature Gradient (ETG) mode and microtearing modes. We present here nonlinear GYRO[1] simulations of microturbulence in a variety of NSTX discharges and make comparisons between numerically simulated and experimentally measured levels of electron-scale turbulence.

[1]J. Candy, R. E. Waltz et al., J. Phys. Conf. Ser. **78**, 012008 (2007).

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