Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Simulation Studies of Electron Temperature Gradient Turbulence in NSTX Plasmas[1] W.X. WANG, R.E. BELL, S. ETHIER, T.S. HAHM, S.M. KAYE, B.P. LABLANC, W.W. LEE, J. MANICKAM, J. MENARD, G. REWOLDT, W.M. TANG, Princeton Plasma Physics Laboratory — Motivated by recent results of high-k measurements in NSTX experiments, we have investigated the electron-temperature-gradient (ETG) driven turbulence and the associated electron transport in NSTX plasmas using a global gyrokinetic simulation. This study contributes to the search for the key microturbulence activities responsible for energy loss through the electron channel in NSTX plasmas under various experimental conditions, including reversed magnetic shear, H- and L-mode discharges. The physical focus of the present study is on i) the dependence of ETG turbulence on the magnetic shear; ii) the effect of equilibrium EXB shear flow; and iii) the effect of collisional dissipation on ETG steady state behavior on the electron collision time scale. The comparison of the k-spectrum in nonlinear saturation with experimental measurements will be discussed.

[1]Work supported by the DoE SciDAC Center for Gyrokinetic Particle Simulation, and DoE contract No. DE-AC02-76-3073.

W. X. Wang
Princeton Plasma Physics Laboratory

Date submitted: 24 Jul 2006 Electronic form version 1.4