Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Intrinsic rotation and residual stress in full-f ITG turbulence simulations[1] S. KU, Courant Institute of Mathematical Sciences, New York University, E.S. YOON, Princeton Plasma Physics Laboratory, C.S. CHANG[2], Courant Institute of Mathematical Sciences, New York University, J.M. KWON, S.M. YI, NFRI, Daejeon, Korea, P.H. DIAMOND, CMTFO and CASS, University of California, San Diego — Intrinsic rotation of tokamak plasma is of interest for macroscopic stability and understanding and control of transport. To study the toroidal rotation generated by flux-driven turbulence, we have performed full-f flux-driven ITG simulations using XGC1p code, which self-consistently evolves the profile of ion temperature, parallel flow and poloidal flow. The growth of net co-current flow with values of $u_{||}/v_{th}$ $\sim$5% is observed with no-slip boundary condition. The residual stress is identified by applying external torque which cancels out the intrinsic rotation. Also, correlation analysis between stress, turbulence intensity, ExB shear, and k-parallel symmetry breaking are performed.

[1]Work supported by US DOE OFES and OASCR.
[2]Also, Korea Advanced Institute of Science and Technology, Daejeon, Korea

Seung-Hoe Ku
Courant Institute of Mathematical Sciences, New York University

Date submitted: 20 Jul 2010 Electronic form version 1.4