

Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Coupled GEM-XGC Simulations of Edge Pedestal Plasmas¹

WEIGANG WAN, YANG CHEN, SCOTT PARKER, University of Colorado, CENTER FOR PLASMA EDGE SIMULATION TEAM — Global GEM gyrokinetic turbulence simulations of the edge pedestal are performed assuming closed flux surfaces and using numerical profiles obtained from the XGC neoclassical calculation². The plasma profiles used in GEM are output from an XGC simulation of L-mode DIII-D plasmas. In electromagnetic turbulence simulations, the obtained anomalous transport diffusivities are much bigger than from simulations in the electrostatic limit. While electromagnetic energy transport diffusivity is comparable to experimental values, the particle transport diffusivity is too high, and it would cause a pedestal crash in the XGC calculation. Adding carbon impurity may reduce the level of particle transport. Work is under way to couple GEM and XGC under the EFFIS end-to-end Frame for Fusion Integrated Simulation.

¹collaborators C.S. Chang, S. Ku and S. Klasky

²Y. Chen and S. Parker, Phys. Plasmas, 15 055905 (2008)

Weigang Wan
University of Colorado

Date submitted: 09 Jan 2009

Electronic form version 1.4