Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Coupled GEM-XGC Simulations of Edge Pedestal Plasmas[1]
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— Global GEM gyrokinetic turbulence simulations of the edge pedestal are performed assuming closed flux surfaces and using numerical profiles obtained from the XGC0 neoclassical calculation[2]. The plasma profiles used in GEM are output from an XGC0 simulation of L- and H-mode DIII-D plasmas. For L-mode plasmas, it is found that electromagnetic effects are important and the heat diffusivities for both electrons and ions are much bigger than from equivalent simulations in the electrostatic limit. While electromagnetic ion and electron energy transport are comparable to experimental values, the particle transport is too high, and such particle diffusion coefficient would cause the pedestal crash in the XGC0 calculation. Adding carbon impurity may reduce the level of particle transport. Work is under way to incorporate the GEM/XGC coupling under the EFFIS – "End-to-end Framework for Fusion Integrated Simulation".

[1]Work supported by DOE SciDAC CPES project.
[2]Y. Chen and S. Parker, Phys. Plasmas **15**, 055905 (2008).

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Date submitted: 22 Jul 2009 Electronic form version 1.4