Abstract Submitted
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Issues in Kinetic Edge Turbulence Simulation[1] S.E. PARKER, Y. CHEN, J. LANG, U of Colorado, Boulder, CO — Simulations of trapped electron modes are underway using GEM [1,2], a global electromagnetic gyrokinetic delta-f simulation with collisions. We report results with no temperature gradient so that ITG and ETG instabilities are not present. For typical weak density gradient core values, the CTEM is dominant. However, for steeper density gradient edge values, higher k drift-waves are most unstable [J. Lang this mtg.]. For the weaker density gradient core case, nonlinear simulations using GEM are routine. For the steeper gradient edge case, the nonlinear fluctuations are very high and a stationary state has not been obtained. More physics, e.g. profile variation and equilibrium ExB shear flow should be significantly stabilizing, and may make such simulations feasible using standard delta-f techniques. These features are fully implemented in GEM and research is ongoing. One approach to addressing the high fluctuation levels in the edge turbulence regime is the particle-continuum method [3]. A new scheme that periodically resets the particle weights, using a Maxwellian particle load is being tested in GEM [Y. Chen this mtg.] and will be discussed. [1] Y. Chen, S. Parker, J. Comput. Phys. 189 463 (2003). [2] Y. Chen, S. Parker, accepted, available online, J. Comput. Phys. (2006). [4] S. Vadlamani, S. Parker, Y. Chen and C. Kim, Comput. Phys. Comm. 164 209 (2004).

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