Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Ohm's law in gyrokinetic magnetic reconnection[1] RYUSUKE NUMATA, WILLIAM DORLAND, TOMOYA TATSUNO, University of Maryland, BARRET ROGERS, Dartmouth College — We present numerical results of nonlinear simulations of collisionless magnetic reconnection in a strong guide magnetic field limit ($B_\perp/B_g \sim \rho/L \ll 1$, where B_g and $B_\perp$ are the guide magnetic field and the magnetic field perpendicular to the guide field, ρ is the Larmor radius, and L is the macroscopic scale length associated with the parallel dynamics to the guide field using the `AstroGK` astrophysical gyrokinetics code. In the presence of the guide field, microscopic electron dynamics in the dissipation region, which is believed to break frozen-in condition, may change because of magnetization. We examine the generalized Ohm's law in the gyrokinetic reconnection, which describes the electron dynamics. The results will be compared with other simulation results based on PIC or fluid models. Specifically, we discuss the effect of off-diagonal elements of the electron pressure tensor.

[1]This work is supported by the DOE Center for Multiscale Plasma Dynamics.

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Date submitted: 21 Jul 2008 Electronic form version 1.4