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Bounce-Averaged Gyrokinetic Simulation of Current-Collection Feedback in a Laboratory Magnetosphere[1] T.M. ROBERTS, D. GARNIER, Columbia University, J. KESNER, MIT Plasma Science and Fusion Center, M.E. MAUEL, Columbia University — A self-consistent, nonlinear simulation of interchange dynamics including the bounce-averaged gyro-kinetics of trapped electrons was previously used to understand frequency sweeping[2] and the turbulent cascades[3] observed in dipole-confined plasmas. Through adjustment of the particle and heat sources this code reproduces dynamics that resemble the turbulence measured experimentally, both in spectral power-law trends and in the onset of a steepened density profile. Time stepping is performed in an explicit leap-frog manner and a flux-corrected transport algorithm is implemented. In this presentation, we discuss the physics and numerical methods of the simulations as well as plans for including the effects of a biasing electrode which can collect or inject electrons. By varying this source/sink of electrons at the electrode location based on the potential fluctuations occurring elsewhere, we study the effects of current-collection feedback to compare to recent experiments observed to regulate interchange turbulence.

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[2]B. Levitt, *Phys Plasmas*, **9**, 2507 (2002).
[3]B. Grierson, *Phys Plasmas*, **16**, 055902 (2009).

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