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The Dissipation Region of Magnetic Reconnection: Kinetic PIC Code Results for Large Systems MICHAEL SHAY, University of Delaware, JAMES DRAKE, University of Maryland, MARC SWISDAK, Naval Research Laboratory — Magnetic reconnection is a fundamental magnetic energy release process in plasmas. Including Hall physics in reconnection models has been shown to play a critical role in allowing fast Alfvénic reconnection even for very large system sizes, which is consistent with observed energy release times. The scaling of the reconnection to large systems has not been performed for fully kinetic simulations, however, and recent simulations with open boundary conditions have found that the electron dissipation region becomes very long, throttling the reconnection rate and leading to secondary tearing and island formation. We present results of large scale kinetic PIC scaling studies of anti-parallel reconnection. The physics controlling the length of the electron dissipation is examined.

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