Abstract Submitted
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Local Dynamics and Global Size Coupling during Magnetic Reconnection[1] C.M. JACOBSON, J.A. BRESLAU, S.C. JARDIN, H. JI, Princeton Plasma Physics Laboratory — Magnetic reconnection is an important physical process not only in small systems such as laboratory plasmas, but also in large systems such as solar flares. The reconnection rate increases with resistivity η and decreases with the current sheet length L. Recent experimental results suggest that these parameters are not independent, but anti-correlate such that ηL is kept roughly constant; thus the reconnection rate is a function of both local dynamics and global size [1]. In order to verify these results and further extend the system size, a numerical MHD model [2] is used. This code allows simulation of either two-fluid or single-fluid resistive MHD reconnection of colliding flux tubes on a 2D grid. The resistivity and system size are systematically varied, and scalings of the ion skin depth, collisionality, and reconnection rate due to these quantities are presented. Results are compared to experimental data, and findings are projected to solar flare scales. [1] A. Kuritsyn *et al.* Geophys. Res. Lett. 34, L16106 (2007) [2] J. A. Breslau and S. C. Jardin, Comput. Phys. Commun. 151, 8 (2003)

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