

Abstract Submitted
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Simulation Study of Magnetic Reconnection Using Wire Ablation Plasma¹ XUAN ZHAO, JOHN GREENLY, CHARLES SEYLER, Cornell University — The results of simulations of 2D X-point magnetic reconnection using the PERSEUS [1,2] code are presented for 2-wire and 4-wire configurations. It is shown that ablated wires begin a rapid plasma expansion phase after the reversal of driving voltage, which is followed by magnetic reconnection characterized by inflow and super-Alfvénic outflow. The quantitative details of the 2D simulation results are presented, including the density, temperature and magnetic field distributions and the results are compared to the experiments on the COBRA 1 MA pulser. Comparison between the magnetohydrodynamics (MHD) and extended-MHD models are also shown for same pulsed power loads.

[1] M. R. Martin, Ph.D. thesis, Cornell University, 2010

[2] C. E. Seyler, et al., Physics of Plasmas 18, 012703, 2011

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Xuan Zhao
Cornell University

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