

Abstract Submitted  
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**Simulations of magnetic reconnection in highly-extended current sheets at the NIF**<sup>1</sup> W FOX, Princeton Plasma Physics Laboratory, D.B. SCHAEFFER, J. MATTEUCCI, Princeton University, M.J. ROSENBERG, LLE, G. FIKSEL, U Michigan, H.-S. PARK, LLNL, A.F.A BOTT, K. LEZHININ, A. BHATTACHARJEE, Princeton University, D. KALANTAR, B.A. REMINGTON, LLNL, D. UZDENSKY, U Colorado, C.K. LI, F.H. SÉGUIN, MIT, S.X. HU, LLE — We present simulations of recent experiments on magnetic reconnection between magnetized laser-produced plasmas at the National Ignition Facility. Two highly-elongated plasma plumes are produced by tiling two rows of lasers, with magnetic field generated in each plume by the Biermann battery effect, and collision of the two plumes drives magnetic reconnection. The experimental evolution is simulated with the particle-in-cell code PSC, which models the experiment ab initio, from the initial magnetic field generation by the Biermann effect at early times, through the formation of a thin current sheet when two plumes collide. Simulations were used to design the experiments, and predictions are compared to experimental observations of plasma and magnetic field evolution, including the formation of a thin current sheet close to the electron gyro-scale.

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W Fox  
Princeton Plasma Physics Laboratory

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