

Abstract Submitted
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Laboratory Investigation of Magnetotail Reconnection¹ SARAH MESSER, NRL-NRC Postdoctoral Associate, W.E. AMATUCCI, Plasma Physics Division, Naval Research Laboratory, L. RUDAKOV, Icarus Research, Inc., Bethesda, MD, D.D. BLACKWELL, D.N. WALKER, Plasma Physics Division, Naval Research Laboratory — An experimental investigation of 3-dimensional magnetic reconnection with non-dimensional parameters comparable to those observed in Earth's magnetosphere is underway in the Space Plasma Simulation Chamber (SPSC) at the Naval Research Laboratory. Reconnection events are studied in a steady-state cylindrical plasma column with a DC magnetic field of 60 Gauss. We pulse an oppositely-directed axial magnetic field rising to about 200 Gauss in 3 μ s. Magnetic reconnection arises as the field-reversed wavefront propagates inward. An array of magnetic probes allows examination of the field structure of individual events. We present both aggregate and individual-shot analyses and compare the gross structure to predictions of Hall MHD and anomalously-resistive models of reconnection. The theory of the different dynamical processes will be presented alongside experimental observations.

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