

Abstract Submitted
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Observation of Characteristic Reconnection Regime Structures in the Terrestrial Reconnection Experiment (TREX)¹ SAMUEL GREESS, JAN EGEDAL, JOSEPH OLSON, ALEXANDER MILLET-AYALA, RACHEL MYERS, JOHN WALLACE, MICHAEL CLARK, CARY FOREST, University of Wisconsin-Madison — Different regimes of collisionless asymmetric reconnection have different characteristic features and are accessed by varying the plasma parameters of the system [1]. Recently, the Terrestrial Reconnection Experiment (TREX), part of the Wisconsin Plasma Astrophysics Laboratory (WiPAL), used four coils in a 3m spherical vacuum vessel filled with plasma to drive reconnection with an external Helmholtz field. By varying the Helmholtz field, drive field, and plasma species, TREX entered experimentally unexplored reconnection regimes. Using magnetic probes, we observed the characteristic structures of these regimes, including exhaust jets and current layers with widths of only a few d_e . These results show better agreement with kinetic simulation than had previously been reported [2] [3]. [1] Le, A. et al. Phys. Rev. Lett., 110, 135004. doi:10.1103/PhysRevLett.110.135004. [2] Le, A. et al. Geophys. Res. Lett., 44, 2096–2104. doi:10.1002/2017GL072522. [3] Ji, H. et al. Geophys. Res. Lett., 35, L13106. doi:10.1029/2008GL034538.

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