Abstract Submitted
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Laboratory verification of electron-scale diffusion regions modulated by a three-dimensional instability[1] SAMUEL GREESS, JAN EGEDAL, University of Wisconsin - Madison, ADAM STANIER, Los Alamos National Laboratory, JOSEPH OLSON, University of Wisconsin - Madison, WILLIAM DAUGHTON, Los Alamos National Laboratory, RACHEL MYERS, ALEXANDER MILLET-AYALA, University of Wisconsin - Madison, ARI LE, Los Alamos National Laboratory, MICHAEL CLARK, JOHN WALLACE, DOUGLASS ENDRIZZI, CARY FOREST, University of Wisconsin - Madison — During magnetic reconnection, the electron fluid decouples from the magnetic field within narrow current layers, and theoretical models for this process can be distinguished in terms of their predicted current layer widths. In agreement with numerical and theoretical results, we present observations from the Terrestrial Reconnection EXperiment (TREX) that confirm the presence of electron scale current layer widths. Although the layers are modulated by a current-driven instability, the narrow experimental current layers are consistent with a 3D simulation for which off-diagonal terms in the electron pressure tensor are responsible for fast reconnection. Further analysis of TREX's new toroidal Bdot probe array will be included.

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