Abstract Submitted
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Turbulent Reconnection in the Magnetic Reconnection Experiment (MRX) S. DORFMAN, H. JI, M. YAMADA, E. OZ, J. YOO, CMSO, PPPL, W. DAUGHTON, V. ROYTERSHTEYN, LANL — One of the key open questions in Magnetic Reconnection is the nature of the mechanism that governs the reconnection rate in real astrophysical and laboratory systems. For collisonless plasmas, the Hall effect removes an important bottleneck to fast reconnection as the heavier ions exit the reconnection layer over a broader region [1]. However, the Hall term cannot balance the reconnection electric field at the layer center, and the 2-D, collisionless expression for the electric field due to particle dynamics [2] has been shown to be insufficient in the Magnetic Reconnection Experiment (MRX) [1,3]. Turbulent 3-D effects such as lower hybrid frequency range fluctuations [4] may play an important role in fast reconnection in MRX. These electromagnetic fluctuations tend to be associated with high local currents and a rapid local reconnection rate. The precise relation of these fluctuations and associated 3-D asymmetries to fast reconnection is a topic of active investigations; the most up to date results will be discussed. This work was supported by NDSEG, DOE, NASA, and NSF.

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