

Abstract Submitted
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Investigation of the 3-D profile of the reconnection layer with and without a guide field B. MCGEEHAN, M. YAMADA, H. JI, S. GERHARDT, C. JACOBSON, J. BAUMGAERTEL, S. DORFMAN, Center for Magnetic Self-Organization in Laboratory and Astrophysical Plasmas, PPPL, Princeton U. — In the reconnecting current sheet in the Magnetic Reconnection Experiment (MRX), the electron diffusion region is verified within the ion diffusion region where the ions become demagnetized. This was confirmed through the appearance of the out-of-plane quadrupole field (QF) during the reconnection process. Because of the QF, the reconnection region is no longer 2-D but is stretched in the out-of-plane direction in a bell shape pattern. This three-dimensional picture (while still axisymmetric) is seen with magnetic probes that measure three magnetic field components. Using magnetics data along with mach probe and langmuir probe data will give the profiles of both the ion and electron fluid velocities. Also, the shape of the in-plane magnetic fields are compared with and without the guide field. In null-helicity (without guide field) a narrow and long current sheet is observed, while in co-helicity (with guide field) a broad O-point type reconnection region is observed. A bipolar electric field profile has been measured in MRX. As the current sheet passes the probe array, a dip in the floating potential is evident. This bipolar electric field will also be investigated as a function of guide field. Work supported by DoE, NSF, and NASA

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