

Abstract Submitted
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Experimental study of the electron diffusion region during guide field magnetic reconnection¹ SAYAK BOSE, Princeton Plasma Physics Laboratory, H. JI, Princeton Plasma Physics Laboratory, Princeton University, W. FOX, M. YAMADA, J. YOO, J. JARA-ALMONTE, Princeton Plasma Physics Laboratory, F. PUCCI, National Institutes of Natural Sciences, A. GOODMAN, Princeton University — The thickness of neutral current sheet in guide field reconnection has been measured under various geometries. However, the variation of the thickness of the electron diffusion region in the current sheet versus guide field strength is an open experimental question. In recent experiments, Fox et. al. [Phys. Rev. Lett. 118, 125002 (2017)] observed the electron diffusion layer to be wider than typical theoretical predictions [M. Hesse, Phys. Plasmas 13, 122107, (2006)], measured at a normalized guide field $B_g/B_{rec} = 0.7$, where B_{rec} represents the upstream reconnecting component. We have studied the variation of the width of the electron diffusion region versus the guide field strength by varying guide field from 0 to 2 B_{rec} , in collisionless, two fluid regime in MRX. We have attempted to relate our results to data from other experiments like TS-3/4, and space observations under various geometries.

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