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Measurement of an Electrostatic Potential Well during Magnetic Reconnection in MRX[1] JONGSOO YOO, MASAAKI YAMADA, HANTAO JI, SETH DORFMAN, ERDEM OZ, PPPL — Numerical simulations and space observations have demonstrated that an electrostatic potential well develops during magnetic reconnection, along the direction normal to the current sheet . The existence of an electrostatic potential well is evidence of two-fluid effects in the diffusion region. Electrons and ions have different heating mechanisms, due to the difference in their fundamental length scales. Unmagnetized ions are considered to obtain energy from the electrostatic potential as they approach the X line. Thus, it is important to measure the magnitude of the potential well to study how ions are accelerated and heated during reconnection. With the help of a 10-tip floating potential probe and Langmuir probes, electrostatic potential wells are observed during 'Pull' reconnection in the Magnetic Reconnection eXperiment (MRX) . The measured potential drop across the current sheet is on the order of 10 V. The location and width of the current sheet are measured by a nearby magnetic probe. The relationship between the magnitude of the potential drop and ion temperature is under investigation.

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