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Measurements of Linear and Nonlinear Hall Reconnection[1] T.D. THARP, A.F. ALMAGRI, A.V. KURITSYN, V.V. MIRNOV, S.C. PRAGER, J.S. SARFF, University of Wisconsin-Madison, D. CRAIG, Wheaton College, CMSO, MST, M.C. MILLER, University of Wisconsin-Madison — Previous measurements in MST have established that two-fluid Hall effects produce a dynamo during sawtooth relaxation events, and therefore two-fluid dynamics are important when evaluating the macroscopic effects of reconnection. This was established by measuring the nonlinear Hall term ($J_1 \times B_1$) in the axisymmetric (flux-surface averaged) Ohm's Law. Here, we report measurements of terms in the *non*-axisymmetric Ohm's Law, including the reconnection electric field and terms that may balance this field. In particular, the linear Hall term, ($J_1 \times B_0 + J_0 \times B_1$), and nonlinear three wave interaction Hall terms are considered. These fluctuation measurements are a more direct indicator of the role of two-fluid effects on reconnection. Measurements are performed by probes in the vicinity of the reversal surface to measure reconnection associated with modes of poloidal mode number m=0. Results of these measurements lead to an estimation of the extent to which classical resistivity can balance Ohm's Law at the reconnection x-point.

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