

Abstract Submitted
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Impulsive Reconnection and the Role of Hall Physics in the Reversed Field Pinch¹ T.D. THARP, A.F. ALMAGRI, M.C. MILLER, V.V. MIRNOV, S.C. PRAGER, J.S. SARFF, University of Wisconsin-Madison — Previous measurements have established that the RFP sawtooth relaxation is characterized by the simultaneous occurrence of multiple impulsive reconnection events. Here, we report measurements of the reconnection Ohm's Law, including the reconnection electric field and terms that balance this field. This analysis is applied to tearing modes with poloidal mode number $m = 0$ and toroidal mode number $n \geq 1$. Measurements are performed with probes in the vicinity of the resonant surface, and clearly indicate that single fluid physics is not sufficient to explain this reconnection. In particular, nonlinear three-wave interaction Hall terms are a strong contributor to the dynamics of this reconnection, indicating the substantial role of collective mode phase matching during sawtooth events.

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