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Simulations of Experiments on Electron Magnetohydrodynamic Reconnection in a Field Reversed Configuration CYNTHIA CORREA, WENDEL HORTON, Institute of Fusion Studies; The University of Texas at Austin — Theory and simulations are developed to interpret laboratory electron magnetohydrodynamic reconnection experiments involving nonlinear whistlers by Stenzel *et.al.* [R.L. Stenzel, M.C. Griskey, J. M. Urrutia, and K.D. Strohmaier, Phys. Plasma **10**, 2780 (2003)]. In that experiment, two current-carrying 30 cm antennas form a Helmholtz coil configuration and produce an elongated dipole field that opposes the uniform ambient field. The current is increased until a field-reversed-configuration with two 3D null points and a 2D null line has been established, and then the current is switched off. The EMHD dynamics are simulated with a 3D three-field nonlinear MHD code. The analytical model includes Poisson bracket nonlinearities that can give rise to vortices and couple energy to higher modes, as well as hyperviscosity to balance the energy exchange. Simulation field topology and dynamics are compared to the laboratory experiment as verification of the simulation code. The experimental setup and other variations are simulated and examined for occurrences of driven and undriven electron magnetohydrodynamic (EMHD) reconnection.

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