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Analysis of Electromagnetic Fields in Inertial Alfven Wave Collisions J.D. RHUDY, B.C. SHANKEN, D.J. DRAKE, Valdosta State University, J.W.R. SCHROEDER, G.G. HOWES, C.A. KLETZING, F. SKIFF, University of Iowa, T.A. CARTER, S. DORFMAN, University of California at Los Angeles —
Turbulence in astrophysical and space plasmas is dominated by the nonlinear interaction of counterpropagating Alfvén waves. Most Alfvén wave turbulence theories have been based on ideal plasma models, such as incompressible MHD, for Alfvén waves at large scales. The theory predicts that the nonlinear interaction of two counterpropagating MHD Alfvén waves will produce a secondary daughter wave. The theory for large scale MHD waves has been previously verified by our research group [1]. However, in the small scale regime where inertial Alfvén waves dominate, the theory has yet to be determined. We present here experiments performed in the Large Plasma Device that focus on the interaction of two counterpropagating inertial Alfvén waves traveling parallel to the background magnetic field. The evidence clearly shows the production of a nonlinear daughter wave, similar to those observed for MHD Alfvén waves.

[1] D. J. Drake, J. W. R. Schroeder, G. G. Howes, C. A. Kletzing, F. Skiff, T. A. Carter, and D. W. Auerbach, Phys. Plasmas **20**, 072901 (2013).

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