

Abstract Submitted
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Experimental studies of interactions between Alfvén waves and striated density depletions in the LAPD¹ D.W. AUERBACH, T.A. CARTER, S. VINCENA, UCLA — Satellite measurements in the earth's magnetosphere have associated Alfvén frequency fluctuations with density depletions striated along the geomagnetic field. This poster presents laboratory studies in the LADP experiment at UCLA modeling this phenomena. Density depletions are pre-formed in the plasma column by selectively blocking a portion of the drive beam, and Alfvén waves are driven in the cavity by means of an inserted antenna. Relevant experimental parameters include an ion cyclotron radius around a mm, alfvén parallel wavelength several meters, electron inertial length around 6 mm, and electron thermal speeds about a third of the alfvén speed. We report here on modifications to the wave propagation due to the density depletion. We also report on the details of the interactions between the driven wave and the secondary drift-alfvén wave instabilities that arise on the density boundary, including wave-wave interactions and possible turbulent broadening effects on the main wave.

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