

Abstract Submitted
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Systematic effects of Alfvén waves on whistler mode transmission

FRED SKIFF¹, J. SCHROEDER, J.D. DRAKE, G.G. HOWES, C.A. KLETZING, University of Iowa, T.A. CARTER, S. DORFMAN, D. AUERBACH, UCLA — We study the systematic effects on whistler mode transmission measurements caused by shear Alfvén waves in the LAPD plasma device with the goal of detecting the plasma dielectric response and electron acceleration along the magnetic field. Alfvén waves with $\delta B/B \sim 10^{-5}$ are generated using an arbitrary spatial waveform antenna adjusted to produce plane waves in the central region of the plasma with a perpendicular wavelength comparable to the collisionless skin depth. In the overdense ($\omega_p/\omega_c \sim 2-3$) LAPD plasma with $B=1800$ G, the whistler mode is the only wave propagating parallel to the magnetic field just below the electron cyclotron frequency. Whistler mode absorption has previously been used successfully to measure the electron temperature, but here we observe systematic changes to the whistler transmission signal caused by the Alfvén wave. We will discuss the problems of separating out the effect of changes in the plasma density (including ducting) with measurements of the perturbed electron velocity distribution.

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