Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Heating and background plasma modification associated with large amplitude kinetic Alfvén wave launch in LAPD[1] T.A. CARTER, D.W. AUERBACH, B.T. BRUGMAN, Dept. of Physics and Astronomy and CMPD, UCLA — Large amplitude kinetic Alfvén waves ($\delta B/B \sim 1\% > k_{\|}/k_{\perp}$) are generated in the Large Plasma Device (LAPD) at UCLA using loop antennas. Substantial electron heating is observed, localized to the wave current channels. The Poynting flux associated with the Alfvén waves is substantial and the observed heating may be at least in part due to collisional and Landau damping of these waves. However, heating by antenna near inductive electric fields may also be responsible for the observations. A discussion of both possibilities will be presented, including measurements of near fields of the antenna. The heating structures the background plasma and results in the excitation of drift-Alfvén waves. These drift waves then interact with the incident Alfvén wave, causing sideband generation which results in a nearly broadband state at high wave power. This process may represent an alternate mechanism by which unidirectional kinetic Alfvén waves can nonlinearly generate a turbulent spectrum. In addition to electron heating, evidence for background density modification and electron acceleration is observed and will be presented.

[1]Supported by NSF grant no. PHY-0547572 and DOE cooperative agreement DE-FC02-04ER54785.

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Date submitted: 24 Jul 2007 Electronic form version 1.4