Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Alfvénic phenomena triggered by resonant absorption[1] G.J. MORALES, F.S. TSUNG, J. TONGE, UCLA — A simulation and modeling study is made of the nonlinear interaction of an electromagnetic pulse with a magnetized plasma having a cross-field density gradient. For small amplitudes the pulse propagates up to the cut-off layer where an Airy pattern develops. Beyond a certain power level the ponderomotive force produced by the standing electromagnetic fields carves density cavities. The excess density piled-up on the side of the cavities causes secondary, field- aligned plasma resonances to arise. Due to the short-scale of the secondary resonant fields excited, strong electron acceleration occurs. The fast electrons exiting the new resonant layers induce a return current system in the background plasma. This generates a packet of shear Alfvén waves of small transverse scale and increasing frequency. The results provide insight into microscopic processes associated with a recent laboratory investigation in which large amplitude Alfvén waves have been generated upon application of high-power microwaves [B. Van Compernolle et al., to appear in *Phys. of Plas*].

[1]Work supported by NSF.

Frank Tsung
UCLA

Date submitted: 25 Jul 2006 Electronic form version 1.4