Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Pulsed Alfvén Wave Experiments in a Helicon Plasma Source
ALEXANDER HANSEN, SAEID HOUSHMANDYAR, EARL SCIME, Wsst Virginia University Department of Physics — Experiments to test a model for ion heating in the fast solar wind based on ion cyclotron damping of MHD turbulence driven by nonlinearly interacting, low frequency Alfvén waves [Matthaeus et. al.,1999], are being conducted in the West Virginia University HELIX (Hot hELIcon eXperiment) device in argon and helium plasmas. It is argued that counter-propagating waves arise from reflection of the waves off of a gradient in the Alfvén speed. The HELIX device has a similar speed gradient profile to that found in the solar corona: a short region of high Alfvén speed followed by an expansion region of lower Alfvén speed. Here we present measurements of pulsed Alfvén waves that have been launched via an exciter probe inserted into the helicon source near to the primary RF antenna. The pulsed scheme makes it easier to detect changes in the plasma parameters in time than the CW method and should produce a broader frequency spectrum Measurements of the wave magnetic field structure, wave phase speed, the radial profile of the wave amplitude, along with time-dependent electrostatic probe measurements will be presented as functions of the plasma density and magnetic field strength in the helicon source.

Alexander Hansen
Wsst Virginia University Department of Physics

Date submitted: 03 Jul 2008 Electronic form version 1.4