Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Magnetohydrodynamic Waves Driven by CW AM Modulation of Helicon Plasmas SAEID HOUSHMANDYAR, ALEX HANSEN, EARL SCIME, West Virginia University — Nonlinearly interacting, low-frequency, magnetohydrodynamic waves, and the resultant cascade of energy to larger perpendicular or parallel wave numbers, have been suggested as a possible explanation for electron and/or ion heating in the expanding solar corona. In experiments undertaken in HELIX (Hot hELIcon eXperiment), we have explored the possibility of exciting large amplitude, low-frequency waves in a high density helicon plasma through the continuous-wave AM modulation of the rf antenna of a helicon plasma source. Magnetic fluctuation measurements indicate that low frequency waves are excited in helium helicon plasmas at the AM modulation frequency. We will present measurements of the parallel and perpendicular wave numbers obtained from ensemble-averaged measurements as a function of AM frequency, background magnetic field strength, and neutral gas pressure. No resonant behavior is observed for AM frequencies close to the helium ion cyclotron frequency.

Saeid Houshmandyar
West Virginia University

Date submitted: 12 Sep 2007 Electronic form version 1.4