

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Alfvén wave Measurements in HelCat at UNM RALPH KELLY, CHRISTOPHER WATTS, YUE ZHANG, MARK GILMORE, University of New Mexico — Neutral damping of Alfvén waves has been theorized to be partially responsible for the heating of the sun's corona. As such, more research is needed to better understand the relationship between Alfvén waves and ion and neutral density. This paper describes one method to launch and observe Alfvén waves in a high-density Argon plasma. The Alfvén waves are launched with a commercial inductor (emitter) and detected with a hand wound B-dot coil. Construction of the emitter, detector and amplifier circuit is described. The Argon plasma is created using the helicon source on HelCat, a linear plasma device at the University of New Mexico. HelCat is a 4 meter long, 50 cm diameter machine with a helicon source on one end and hot cathode source on the other. Initial data collected indicating the presence of Alfvén waves in Argon plasma is presented. Neutral density will be adjusted by pre-ionizing the gas with the cathode and/or an external UV lamp.

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Date submitted: 18 Jul 2007

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