Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Instability of obliquely propagating dust waves in a collisional highly magnetized dusty plasma M. ROSENBERG, Dept. of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA 92093, P.K. SHUKLA, Institut fuer Theoretische Physik IV, Fakultaet fuer Physik und Astronomie, Ruhr-Universitaet Bochum, D-44780 Bochum, Germany — In laboratory dusty plasmas immersed in large magnetic fields of the order of a tesla, the ions and electrons can be magnetized while micron-sized charged dust grains are generally unmagnetized because their collision frequency is much larger than their gyrofrequency. In this case, very low frequency dust wave instabilities may be excited by ion or electron cross-field drifts. We consider theoretically the excitation of obliquely propagating dust waves due to a dissipative modified two-stream instability driven by ion cross-field drift[1]. The growth rate is compared with those of other dust wave instabilities that may occur in such collisional, highly magnetized dusty plasmas; these include a streaming instability driven by ions flowing along the magnetic field[2], and a drift instability driven by electron diamagnetic drift[3]. We determine which instability dominates in various parameter regimes. [1]Rosenberg, M. and Shukla,P. K., *J. Plasma Phys.*, to appear, 2006. [2]Rosenberg, M. and Shukla, P. K., *J. Plasma Phys.* **70**, 317 (2004). [3]Rosenberg, M. and Shukla, P. K., *Plasma Phys. Control. Fusion* **46**, 1807 (2004). Work partially supported by DOE Grant No. DE-FG02-04ER54804.

M. Rosenberg
Dept. of Electrical and Computer Engineering,
University of California, San Diego, La Jolla, CA 92093

Date submitted: 21 Jul 2006 Electronic form version 1.4