

Abstract Submitted
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Investigation of dust vertical dispersion relations JIE KONG, KE QIAO, TRUPELL HYDE, CASPER - Baylor University — The dust acoustic wave (DAW) was first theoretically predicted in 1990 by Rao et al. [Ref] and later observed experimentally by Barkan, et al. [Ref. 2], Pieper and Goree [Ref. 3] and others. The charge on the dust, Debye length and various other fundamental complex plasma parameters can be obtained experimentally through measurement of the DAW. Since under normal laboratory conditions, ordered structures formed within a complex plasma are generally two dimensional in nature, the majority of experiments to date examining such a system's dispersion relationships have been conducted on the horizontal plane. We will present an experimental method providing for a vertical dispersion relationship measurement, and present corresponding data. References [1]. N. N. Rao, P. K. Shukla, and M. Y. Yu, "Dust-acoustic waves in dusty plasmas," *Planet. Space Sci.* 38, 543-546 (1990). [2]. A. Barkan, R. L. Merlino, and N. D'Angelo, "Laboratory observation of the dust-acoustic wave mode," *Phys. Plasmas*, 2, 3563-3565, 1995. [3]. J. B. Pieper, J. Goree, "Dispersion of Plasma Dust Acoustic Waves in the Strong-Coupling Regime," *Phys. Rev. Lett.*, 77, 3137-3140, 1996.

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