

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Boundary analysis of a dusty plasma¹ JOHN MCKEE, JEREMIAH WILLIAMS, EDWARD THOMAS, Auburn University — In the field of dusty plasmas, direct measurements of fundamental quantities such as the dust grain charge or the potential structure of the dust cloud has proven challenging. For example, the use of probes often alters the spatial and electrical structure of the cloud, thereby perturbing the quantities that are being measured. Therefore, optical techniques have been the primary method for diagnosing dusty plasmas. However, a relatively non-intrusive alternative may have presented itself through the use of the transport of the microparticles themselves as a diagnostic tool. Here, particle image velocimetry (PIV) and high speed imaging techniques are used to measure particle transport in the cloud. This presentation focuses on the plasma - particle cloud interface region. Transport measurements suggest that particles at the cloud boundary have much higher velocity than interior particles. This presentation will present data on these two regions and discuss possible mechanisms for the differences between interior and boundary particles.

¹This work supported by NSF Grant PHY-0354938

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Date submitted: 22 Jul 2005

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