

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

A Proposed Magnetized Dusty Plasma User Facility E. THOMAS, Auburn University, R.L. MERLINO, University of Iowa, M. ROSENBERG, University of California - San Diego — As the experimental study of dusty (complex) plasmas has advanced over the last two decades, a great deal of new insight has been gained on the complex interaction between the background plasma and charged microparticles. Even though the charged dust grains in a typical experiment can acquire several thousand elementary charges, the large mass of the grains ensures that the charge-to-mass ratio is quite low. As a result, it has been considered experimentally challenging to design an experiment that can achieve full magnetization of ions, electrons, and the charged dust grains. However, with continuing improvements in magnet design and sub-micron particle imaging technologies, it is now possible to contemplate the development of a Magnetized Dusty Plasma Facility. This presentation discusses the design, experimental parameters, and scientific motivation for a flexible, superconducting, 4 Tesla magnetic field user facility for the study of magnetized dusty plasmas. This work is supported by NSF grant number PHY-0936470 (AU), DOE Grant No. DE-FG01-04ER54795 (UI) and DOE Grant No. DE-FG02-04ER54804 (UCSD)

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Date submitted: 20 Jul 2009

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