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Magnetized Dusty Plasma Experiment (MDPX): Initial Observations and Measurements[1] EDWARD THOMAS, ROSS FISHER, UWE KONOPKA, Auburn University, ROBERT MERLINO, The University of Iowa, MARLENE ROSENBERG, University of California - San Diego, MDPX TEAM —
The mission of the Magnetized Dusty Plasma Experiment (MDPX) is to study the fundamental properties of a plasma in which first the electrons, then the ions, and finally the charged dust grains come under the influence of an externally applied magnetic field whose magnitude can be increased to 4 T or greater. The MDPX device, which has been under construction for the last two years, is expected to begin magnetized plasma operations in early Fall, 2013. Initial investigations will focus on high magnetic field operations, stable plasma generation at high magnetic field strengths, and the initial characterization of the dust particle response to the magnetic fields. Additionally, these initial tests will also provide an opportunity to test and validate the operation of the diagnostic systems (e.g., Langmuir probes, fast video cameras, particle image velocimetry, laser induced fluorescence, etc.) at high magnetic field strengths. This presentation will discuss the initial performance of the MDPX device, initial observations of plasma and dusty plasma behavior, and the long-term experimental plan for MDPX.

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