

Abstract Submitted
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Characterization of Imposed Ordered Structures in MDPX¹

TAYLOR HALL, EDWARD THOMAS, UWE KONOPKA, Auburn University, ROBERT MERLINO, University of Iowa, MARLENE ROSENBERG, University of California - San Diego — It is well understood that the microparticles in complex, or dusty, plasmas will form self-consistent crystalline patterns at the proper plasma parameters. In the Magnetized Dusty Plasma Experiment (MDPX) device, studies have been made of imposed, ordered structuring of the dust particles to a two dimensional grid. At high magnetic field ($B > 1$ Tesla), the dust particles are shown to become spatially oriented to the structure of a wire mesh embedded in an electrically floating, upper electrode while the particles are suspended in a plasma that is generated by the powered, lower electrode in the experiment. With even higher magnetic field ($B > 2$ Tesla), the particles become strongly confined to the mesh pattern with the particles constrained to a quasi-discreet motion that closely follows the mesh pattern. This presentation characterizes the structure of the potential energy well in which the dust particles are trapped through observation of particle motion and measurement of the thermal properties of the particles.

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