

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Methods for the characterization of imposed, ordered structures in MDPX TAYLOR HALL, EDWARD THOMAS, Auburn University — It is well understood that the microparticles in complex, or dusty, plasmas will form self-consistent crystalline patterns (plasma crystals) under the proper plasma parameters. In the Magnetized Dusty Plasma Experiment (MDPX), studies have been made of an imposed ordering of the dust particles to a two-dimensional grid where the dust particles are shown to become spatially oriented to the structure of a wire mesh embedded in the upper electrode [1]. At high magnetic fields ($B > 1.5$ T), the particles become more confined to this structure with their motion limited to “hopping” through the grid pattern, or being confined to a single grid point [2]. A reliable and meaningful method of describing the degree to which the dust particles are restricted to this grid pattern is needed and a several potential methods for doing so are presented. The application of these techniques to characterize the background plasma parameters at which these imposed, ordered structures appear will be shown. [1] E. Thomas, et al., Phys. Plasmas **22**, 30701 (2015). [2] E. Thomas, et al., Phys. Plasmas **22**, 113708 (2015). This work is supported by the U. S. Dept. of Energy and the NSF.

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Date submitted: 16 Jul 2017

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