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Supersonic Particles Trapped below a Plasma Crystal WILLIAM

THEISEN, Ohio Northern University — Supersonic dust particles traveling below a two dimensional Coulomb crystal were studied. The strongly-coupled dusty plasma Coulomb crystal forms a hexagonal lattice in a horizontal plane and levitates in a parabolic potential well. During the formation of a crystal occasionally, one to several of the electrically charged microspheres becomes trapped below the crystal exhibiting supersonic stochastic flight characteristics. Trajectory plots, speed distribution charts and position time histories of the particles were generated and analyzed. A decomposition of particle position into x - y coordinates shows oscillatory motion at a frequency of 2 Hz.

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