

Abstract Submitted  
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**Out-of-Plane Motion in a Shocked 2D Dusty Plasma**<sup>1</sup> ANTON KANANOVICH, JOHN GOREE, University of Iowa — A 2D dusty plasma is prepared, in an experiment, as a layer of micrometer-size monodisperse particles, levitated in the sheath above the lower electrode in a low-temperature plasma. The microparticles acquire large electrical charges and become strongly-coupled. Particles are confined vertically by a deep potential well, due to the combination of an upward electric force from the sheath, and the downward force of gravity. In the horizontal direction, they are confined by a much more gentle potential well, due to the sheath's curvature. Normally the microparticles remain always in a single layer, but in this experiment, extreme compression is applied by the propagation of a shock. We find that this extreme compression causes some microparticles to be pushed briefly out of the layer. This splitting or “buckling” of the layer was studied in experiment. A simple analytical model was developed to explain the buckling.

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