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Gravitational-Inelastic Collapse of a Granular Gas GREG VOTH, KIN YAN CHEW, Wesleyan University, JOHN PEREZ, University of Hartford —
We experimentally explore the collapse of a granular gas that occurs when the energy input is halted. In a gravitational field, the gas rapidly collapses to a static state at the bottom of the container. In the quasi-2D experiment with glass spheres confined between two glass plates, video particle tracking can be used to measure the granular temperature, mean velocity, and density fields with good resolution in time and space. The collapse process shows fascinating structure including nearly complete collisional cooling during free fall and a compressional heating shock. We will discuss the ability of hydrodynamic models to reproduce the experimental results.

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