Abstract Submitted
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Experimental measurements of the collapse of a 2D granular gas under gravity GREG VOTH, REUBEN SON, JOHN PEREZ, Wesleyan University — We experimentally measure the decay of a quasi-2D granular gas under gravity. A granular gas is created by vibro- fluidization, after which the energy input is halted, and the time-dependent statistical properties of the decaying gas are measured with video particle tracking. There are two distinct cooling stages separated by a high temperature settling shock. In the final stage, the temperature of a fluid packet decreases as a power law $T \propto (t_c - t)^{\alpha}$ just before the system collapses to a static state. The measured value of α ranges from 3.3 to 6.1 depending on the height, significantly higher than the exponent of 2 found in theoretical work on this problem [Phys Rev. E 73, 61305 (2006)]. We also address the question of whether the collapse occurs simultaneously at different heights in the system.

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