

Abstract Submitted
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Experimental Avalanches in a Rotating Drum.¹ ALINE HUBARD, Levich Institute of City College of New York, COREY O’HERN, Department of Mechanical Engineering Materials Science, Department of Applied Physics, and Department of Physics, Yale University, MARK SHATTUCK, Levich Institute and Physics Department of The City College of New York and CUNY Graduate Center — We address the question of universality in granular avalanches and the system size effects on it. We set up an experiment made from a quasi-two-dimensional rotating drum half-filled with a monolayer of stainless-steel spheres. We measure the size of the avalanches created by the increased gravitational stress on the pile as we quasi-statically rotate the drum. We find two kinds of avalanches determined by the drum size. The size and duration distributions of the avalanches that do not span the whole system follow a power law and the avalanche shapes are self-similar and nearly parabolic. The distributions of the avalanches that span the whole system are limited by the maximal amount of potential energy stored in the system at the moment of the avalanche.

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