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Breaking of granular jams with mechanical shocks KE CHEN, ANDREW HARRIS, JOHN DRASKOVIC, PETER SCHIFFER, Department of Physics, Penn State University — We studied the brief granular flows initiated by breaking the jamming in a hopper using mechanical shocks. Jamming near the orifice of a hopper prevents granular materials from flowing spontaneously under gravity. Controlled mechanical shocks were applied from the bottom of the hopper to break the jamming and to initiate brief flows. The magnitude and the duration of the flows were measured. Preliminary results show that the probability of initiating a flow increases with the intensity of the shock, and reaches almost 100% at the highest shock intensities. We also investigated the flow probability as a function of the ratio between the diameters of the orifice and the bead. Statistical characteristics of the flow magnitude and duration evolve with shock intensity as well as the ratio between the diameters of the orifice and the bead. This research was supported by the NASA through grant NAG3-2384 and the NSF REU program through grant DMR 0305238.

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