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Emergence of fluid-like granular ejectas generated by sphere impact JEREMY MARSTON, SIGURDUR THORODDSEN, KAUST — Experimental data is presented for the speed and shape of the ejecta when a solid sphere impacts onto a granular bed. We use high-speed imaging to provide direct measurement of individual grain velocities and trajectories as well as the overall evolution of the granular ejecta. For larger bed grain sizes, the velocities of the first ejected grains increase with the kinetic energy of the impacting sphere. We also observe that the fastest grains, which can obtain velocities up to 8 times that of the impacting sphere, emerge at the lowest ejection angles. As the grain size is decreased, a more 'fluid-like' behavior is observed whereby the ejected material first emerges as a thin sheet between the sphere and the bed surface. In this instance, in contrast to previous studies, we find the evolution of the ejecta radius approaches a $t^{1/2}$ scaling law, as seen for the crown evolution in liquid drop impacts.

Jeremy Marston
KAUST

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