Abstract Submitted
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Experimental study of the collapse of cohesion-controlled granular materials[1] ALBAN SAURET, UC Santa Barbara, ADRIEN GANS, IUSTI, Aix Marseille Univ, CNRS, MINGZE GONG, UC Santa Barbara, OLIVIER POULIQUEN, MAXIME NICOLAS, IUSTI, Aix Marseille Univ, CNRS — Cohesive granular media are encountered in many geophysical and industrial applications, examples being cement, pharmaceutical powders, or flours. Many progress has been made in the description of dry granular flow, but the flow behavior of powders remains elusive. In particular, one difficulty lies in the cohesion force between the particles. Using a recently developed method to create a Cohesion Controlled Granular Material (CCGM) and relate the interparticle cohesion to the macroscopic behavior, we consider experimentally the collapse of a column made of cohesive grains. This configuration has been extensively studied in the case of dry granular material: when the grains are released, the granular mass spreads and stops at a finite distance. The morphology of the deposit is mainly controlled by the initial aspect ratio and is independent of the material properties. Yet, for powders the inter-particle forces strongly affect the collapse. Here, we characterize the effects of cohesion on the collapse dynamics, the run-out length, and the final morphology of the deposit. These experiments illustrate that cohesive forces between particles introduced an additional complexity in this system.

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