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Granular Column Collapse

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The talk presents experimental observations of the collapse of vertical columns of small grains. Some flows were analysed using high-speed video, from which sequences will be shown. Three regimes dependent on the aspect ratio a=hi/ri exist, where hi and ri are initial height and radius of the column. In all cases a central, conical region remains undisturbed throughout the motion. The final extent of the deposit and the time for emplacement are systematically collapsed independent of any friction coefficients. Along with kinematic data for the rate of spread of the front, this is interpreted as indicating that frictional effects between individual grains in the bulk of the flow only play a role in the last instant of the flow, as it comes to an abrupt halt. Insights and conclusions gained from these experiments can be applied to a wide range of industrial and natural flows of concentrated particles.

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