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Granular Flows on a Heap

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Flow of granular material on a heap is experimentally investigated. A layer of granular material is flowing from a hopper on top of a static pile in a channel. We study the role of the side walls and show that it has a dramatic influence on the dynamics of the flow. First, we show that the angle of the free surface increases with flow rate for narrow channel but remains constant when the side walls are far enough. This result is explained by the additional solid friction induced by the side walls. We also study systematically the velocity profiles at the side walls using PIV and compare these measurements with estimations of flow depth far away from the walls.

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