

Flow of a Concentrated Suspension Down a Rough Plane

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Submarine landslides have a great importance in geophysics because of their consequences (submarine canyons, tidal waves). They occur when a large amount of granular material (sand) flows downslope. But the rheology of the sand and water mixture is still not well understood. We lead experiments of submerged granular flows in a water tank. The particles are spherical glass beads and flow down a rough inclined plane from a reservoir with a controlled opening. Thickness, velocity and interstitial fluid pressure of the avalanche are measured, as well as the deposit thickness when the flow is over. Results show that the flow behavior changes abruptly for a small angle variation. Indeed, for a small variation of inclination angle above 36 degrees, the avalanche velocity increases rapidly. We suspect that a transition between a contact regime and a suspension regime occurs.

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