FM17L_10959

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Gravity Flow of a Densely-Packed Granular Material

Jean Rajchenbach

Université de Nice-Sophia Antipolis, Nice, France

We present experimental results concerning the rapid flow of a densely-packed grain collection down a bumpy inclined channel. We show that the results do not agree with the predictions of the standard kinetic theory, relying on the binary collision hypothesis. Emphasizing the role played by multicontact collisions in the dense limit, we propose a new approach relying on a long range dissipation scheme. Our model succeeds in accounting qualitatively and quantitatively for the linear profile of velocity found in experiments on dense gravity-driven flows.

View the extended summary