

Abstract Submitted
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Transverse Instability of Avalanches in Granular Flows down Incline¹ IGOR ARANSON, Argonne National Laboratory, FLORENT MALLOGGI, ERIC CLEMENT, ESPCI, France — Avalanche experiments on an erodible substrate are treated in the framework of “partial fluidization” model of dense granular flows. The model identifies a family of propagating soliton-like avalanches with shape and velocity controlled by the inclination angle and the depth of substrate. At high inclination angles the solitons display a transverse instability, followed by coarsening and fingering similar to recent experimental observation. A primary cause for the transverse instability is directly related to the dependence of soliton velocity on the granular mass trapped in the avalanche.

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