

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Width of Shear Zones in Gravity-Driven Granular Flows SHUBHA TEWARI, Western New England University, BULBUL CHAKRABORTY, Brandeis University — Gravity-driven granular flow in a vertical hopper exhibits a flow profile that consists of a plug near the center and a shear zone near the boundary walls. It has been observed that the width of the shear zone is a few particle diameters and is independent of the channel width, however, the mechanism by which the width is selected remains unclear. Using event-driven simulations of granular flow in a two-dimensional hopper, we investigate the width of the shear zone as a function of the channel width and the boundary conditions at the wall. We focus on the role played by fluctuations in the stress as the source of activated slips near the wall as a candidate mechanism for the shear zone.

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Date submitted: 10 Nov 2011

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