Growing length scale in gravity-driven dense granular flows
SHUBHA TEWARI, University of Massachusetts, Amherst, MELANIE FINN,
Mount Holyoke College, ALLISON FERGUSON, University of Toronto, BULBUL
CHAKRAVARTY, Brandeis University — We report on simulations of a two-
dimensional, dense, bidisperse system of inelastic hard disks falling down a vertical
tube under the influence of gravity. We examine the approach to jamming as the
average flow of particles down the tube is slowed by making the outlet narrower.
Defining coarse- grained velocity and stress fields, we find a length scale and a time
scale can be extracted from two-point spatial and temporal correlations of these
fields. Both length and time scales are found to grow as jamming is approached [1].
In an ongoing effort to understand the origin of the growing length and time scales,
we have been investigating velocity profiles and distributions, and we will report on
these results.

[1]S. Tewari, B. Tithi, A. Ferguson and B. Chakraborty, arXiv:0806.2413

Shubha Tewari
University of Massachusetts, Amherst