

Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Impulse Absorption by Tapered Alignments of Elastic Spheres

ROBERT DONEY, U.S. Army Research Laboratory, SURAJIT SEN, Dept. Physics; SUNY Buffalo — A numerical parametric study of 1D granular systems with Hertzian spheres is investigated. The relevant and always-repulsive interaction potential is nonlinearly dependent upon the overlap of adjacent grains. Specifically, we report our extensive investigation of two distinct systems and provide hard-sphere approximations as well as results from the numerical solution to the equations of motion. Chains can be characterized by the number of grains, N , the successive decrease in particle size or tapering, q , and restitutive losses, ω . By increasing the tapering, these chains act as shock absorbers by converting well-defined pulses into noise and spreading the energy among all members in the chain.

Robert Doney
U.S. Army Research Laboratory

Date submitted: 08 Apr 2005

Electronic form version 1.4