Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

**Continuum Simulation of Impact into Granular Beds**[1] ERIC WILKINSON, JON BOUGIE, Physics Department, Loyola University Chicago —
We investigate the dynamics of objects impacting into a granular medium using continuum simulations. Although a static bed with long-lasting contact between grains exhibits a solid-like configuration, the bed may become locally fluidized near an impact by an external object. Studies of shock propagation through granular beds suggest grains may flow freely near the impact site, yielding behaviors that could be analyzed using a granular hydrodynamics approach. We test the ability of a set of proposed granular hydrodynamics equations to describe the dynamics of a granular bed following impact using a numerical simulation. This system provides a test case to study the applicability and limitations of a hydrodynamics approach for modeling granular systems with coexisting static and fluidized states. Additionally, this system could provide a basic model to develop a better understanding of a range of phenomena such as meteor impact, biological locomotion over sand, and the performance of protective materials.

[1]This research was supported by an award from Research Corporation for Science Advancement.

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Date submitted: 06 Aug 2010 Electronic form version 1.4