1099-35-88   **Panayotis G. Kevrekidis*** (`kevrekid@gmail.com`), 710 N. Pleasant Street, Department of, Mathematics and Statistics, University of, Massachusetts, Amherst, MA 01003. *Dynamics of Nonlinear Waves in Granular Crystals.*

In this talk, we will provide an overview of results in the setting of granular crystals, consisting of beads interacting through Hertzian contacts. We will start from the simplest setting of one- dimensional, monoatomic chains where highly localized traveling waves exist and we will also examine states in the form of (dark) discrete breathers and shock waves therein. Wherever possible, we will corroborate these considerations with recent experimental results. We will then extend our considerations to the case of diatomic chains and examine how the properties of traveling waves and also of discrete breathers are modified in the latter setting. More highly heterogeneous chains will be briefly examined as well. In addition to considering the purely Hamiltonian case, select examples of the damped-driven variant of the system and its rich phenomenology, including chaotic response and bistability/hysteresis will also be shown. Finally, the results will be extended to two dimensions and some prototypical examples thereof in hexagonal, as well as square chains will be provided. (Received January 28, 2014)