Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Study on a 2D system of granular particles under a cyclic shear
DOYCHO KARAGYOZOV, ABIGAIL POLIN, JOHN ROYER, PAUL CHAIKIN, New York University — Recent computer simulations of granular material under cyclic shear revealed an interesting phase diagram with ordered and disordered spatial and/or temporal patterns. The transition from reversible to irreversible dynamics in systems of many interacting particles is of a fundamental importance to many-body physics. To investigate these effects experimentally we built a two dimensional version where mono-disperse and poly-disperse disks are periodically driven in a parallelepiped shear cell. We track the particle dynamics and measure local packing changes as a function of shear amplitude and find diffusive behavior, localization of motion, reversibility, and macroscopic and microscopic limit cycles.

Doycho Karagyozov
New York University

Date submitted: 09 Nov 2012 Electronic form version 1.4