Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Experiments on Memory in a Sheared Soft Solid NATHAN KEIM, DEVIN WIEKER, LUKE HOROWITZ, California Polytechnic State University, San Luis Obispo — We consider how a soft 2D jammed material may form memories of past deformation. Our experiments cyclically shear a material made of repulsive particles at an oil-water interface, observing the motion of many particles. Under repeated shearing, the system can evolve toward a "limit cycle" in which the same particle rearrangements recur on each cycle of shear; the set of rearrangements is specific to the strain amplitude. We discuss how the materials history-dependence may be viewed as a memory of the strain amplitude, and we report on progress in describing this behavior, including whether memories of multiple strains may coexist.

Nathan Keim
California Polytechnic State University, San Luis Obispo

Date submitted: 31 Jul 2015 Electronic form version 1.4