

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Self-Organization of Bouncing Oil Drops: Two-Dimensional Lattices and Spinning Clusters¹ SUZANNE LIEBER, MELISSA HENDERSHOTT, APICHART PATTANAPORKRATANA, JOSEPH MACLENNAN, University of Colorado — Multiple oil drops bouncing on the surface of a vertically vibrating bath of the same oil exhibit self-organization behavior in two dimensions. S. Protière et al. [J. Phys.: Condens. Matter **17**, S3529 (2005)] recently reported that such drops arrange themselves in triangular lattices, with a lattice spacing dependent on the driving frequency of the bath. We describe here the morphology and dynamic behavior of stable assemblies of large bouncing oil drops, for which we find that not only the spacing but the lattice structure itself changes with frequency, with variants of both square and hexagonal structures being observed. Large “rafts” of drops form soft triangular lattices with faceted boundaries. Small clusters of drops are unstable to coherent, collective spinning under certain driving conditions, manifesting spontaneous rotational symmetry breaking.

¹This work was supported by NSF MRSEC Grant No. DMR-0213918 and by NASA Grant NAG-NNC04GA50G.

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Date submitted: 13 Nov 2006

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