Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Wet granular walkers and climbers ZEINA S. KHAN, Chemical Engineering Department, Texas Tech University, AUDREY STEINBERGER, Laboratoire de Physique, Ecole Normale Superieure de Lyon, RALF SEEMANN, Experimental Physics, Saarland University, STEPHAN HERMINGHAUS, Max Planck Institute for Dynamics and Self-Organization — We have observed that when a bidisperse mixture of glass beads is moistened by a fluid and shaken sinusoidally in a vertical container, small clusters of beads take off from the surface of the pile and rapidly climb up the container walls against gravity. These self-organized clus- ters are held together and against the wall by liquid capillary bridges, and are led by one large grain with one or more small grains trailing behind. When similar clusters are placed on a horizontally vibrating substrate they self-align and travel horizontally along the axis of vibration with a ratchet-like motion. We report a detailed experimental study performed for the simplest walker system consisting of one large and one small bead, and present a simple model that accounts for the observed behavior. Reference: Z.S. Khan *et al.*,*New J. Phys* **13**, 053041 (2011).

Zeina Khan
Chemical Engineering Department, Texas Tech University

Date submitted: 29 Nov 2011 Electronic form version 1.4