

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

On the route to shear jamming, are fragile states real? LING ZHANG, JIE ZHENG, JIE ZHANG, Shanghai Jiaotong University — Shear jammed states have been discovered in recent experiments (Zhang et al Granular Matter 2010, Zhang et al Soft Matter 2010, and Bi et al Nature 2011). Due to the existence of friction between the system and the third dimension, it is unclear whether a fragile state would still exist along the route of shear jamming if the friction were completely eliminated. In a novel apparatus developed recently at SJTU, the friction is successfully eliminated by letting the particles float on the surface of a shallow water layer, revealing more details of the route of shear-jamming. Using high-precision force-gauge and simple-beam apparatus, we are able to measure small forces of three orders of magnitude below the limit of the photo-elastic resolution between particles and boundaries. In this talk, we are going to report the recent progress towards the understanding of the nature of the fragile states.

Jie Zhang
Shanghai Jiaotong University

Date submitted: 14 Nov 2013

Electronic form version 1.4