

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Studying the low-frequency quasilocalized modes in disordered colloidal systems LEI XU, PENG TAN, Physic Dept., The Chinese University of Hong Kong, NING XU, Physic Dept., The University of Science and Technology of China, ANDREW SCHOFIELD, Physic Dept., University of Edinburgh — In disordered colloidal systems, we experimentally measure the normal modes with covariance matrix method, and clarify the origin of low-frequency quasilocalization at single-particle level. We observe important features from both jamming and glass simulations: there is a plateau in the density of states which is suppressed upon ompression, as predicted by jamming; within the same systems, we also find that the low-frequency quasilocalization originates from the coupling between large vibrations of defective structures and transverse excitations, consistent with recent glass simulation. The coexistence of these features demonstrates an experimental link between jamming and glass. Extensive simulations further show that such structural origin of quasilocalization is universally valid for various temperatures and volume fractions.

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Date submitted: 28 Nov 2011

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