

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Hot spots in an athermal system JEROME CRASSOUS, AXELLE AMON, IPR UMR 6251, Universite Rennes 1, France, VAN BAU NGUYEN, PMMH, ESPCI, UMR CNRS 7636 and Universite Paris 6 & Paris 7, 75005 Paris, Franc, ARY BRUAND, ISTO, UMR 6113, 45000 Orleans, France, ERIC CLEMENT, PMMH, ESPCI, UMR CNRS 7636 and Universite Paris 6 & Paris 7, 75005 Paris, France — We study experimentally the dynamical heterogeneities occurring at slow shear, in a model amorphous glassy material i.e. a 3D granular packing. The deformation field is resolved spatially using a Diffusive Wave Spectroscopy technique. The heterogeneities show up as localized regions of strong deformations spanning a mesoscopic size of about 10 grains and called the 'hot spots'. The spatial clustering of hot-spots is linked to the subsequent emergence of shear bands. Quantitatively, their apparition is associated with the macroscopic plastic deformation and their rate of occurrence gives a physical meaning to the concept of “fluidity,” recently used to describe the local and non-local rheology of soft glassy materials.

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Date submitted: 16 Nov 2011

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