

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Sorting Category: 12.7.2 (C)

Universal Scaling Relation Near Point J¹ THOMAS HAXTON, ANDREA LIU, Department of Physics and Astronomy, University of Pennsylvania — Recently, several studies (P. Olsson and S. Teitel. *Phys. Rev. Lett.* **99**, 178001 (2007); T. Hatano. arXiv:0803.2296; L. Berthier and T. A. Witten. arXiv:0810.4405) have indicated the existence of a dynamical phase transition at or near Point J, the point at zero temperature, zero shear stress, and a critical density where repulsive amorphous sphere packings lose rigidity. However, a universal scaling relation connecting the rheology of the jammed solid to that of the viscous liquid has been lacking. We control the temperature, strain rate, and pressure in molecular dynamics simulations to show that the steady-state rheology is described by a universal scaling relation near Point J.

¹Supported by NSF-DMR-0605044.

Prefer Oral Session
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Date submitted: 17 Dec 2008

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