

Abstract Submitted
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Transient rheological behavior of suspensions near the jamming transition ERIC BROWN, HEINRICH JAEGER, The University of Chicago — We performed transient rheological measurements on suspensions at several packing fractions near the jamming transition. A slow shear displacement was applied, then the shear stress was abruptly set to zero to observe the relaxation behavior. A harmonic oscillator model can be used to obtain the elastic part of the yield stress from oscillations and a transient viscosity from the relaxation time. For displacements smaller than a particle size elastic behavior is found if there is shear thinning at packing fractions below the jamming transition. For larger displacements, there is a relaxation but no oscillation. Remarkably, the transient viscosity differs from the steady-state viscosity at packing fractions near the jamming transition; the transient viscosity remains finite while the steady-state viscosity diverges at jamming.

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