

Abstract Submitted
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Density of states and soft modes of hard sphere colloidal glasses – experimental observations.¹ ANTINA GHOSH, VIJAYAKUMAR CHIKKADI, PETER SCHALL, University of Amsterdam, The Netherlands, JORGE KURCHAN, ESPCI, France, DANIEL BONN, University of Amsterdam, The Netherlands — Recent theories and simulations have predicted the presence of soft modes due to which the DOS of glassy materials does not go to zero at zero frequency. We obtain DOS of colloidal hard sphere suspensions from experimental data. The displacement fields of hard sphere colloidal suspensions were studied for a range of volume fractions near the glass transition using confocal microscope. Normal mode frequencies are then computed from the time averaged correlation matrix. The density of vibrational states obtained from normal mode analysis indeed reveals an excess of low frequency anomalous modes in the system. To understand the nature of the modes we analyse the displacement vector fields at various frequencies.

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