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**Direct measurement of the distinct part of van Hove correlation function $G_d(r,t)$ in colloidal gels and glasses** YONGXIANG GAO, MARIA KILFOIL — Great effort has been put into understanding the mechanism and dynamics of glass formation, and progress has been made. It is now known that the cage effect causes the dynamical arrest, and thus the observed glass transition. This has been proven by direct observation by microscopy, by light scattering and rheology experiments of hard sphere systems near the glass transition, and by computer simulation. However, no real-space direct three dimensional measurements of large-length-scale dynamics have been done in glass samples. The distinct part of the van Hove correlation function $G_d(r,t)$ provides direct access to the dynamics in glassy systems at all length scales. We use confocal microscopy to measure this function in both colloidal gels and glasses. Since both glass and gel formation are kinetic and not thermodynamic phenomena, we may expect that they share similarities. By looking at their dynamics, we may gain more insights into the unified jamming picture of liquid-to-disordered-solid transition.

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