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Structural Correlations in Glass-Forming Hard Spheres Fluids

PATRICK CHARBONNEAU, Duke University, BENOIT CHARBONNEAU, St. Jerome's University and University of Waterloo — Recent studies have detected the presence of a growing static length scale associated with the glassy dynamical slowdown. Yet no fully satisfying microscopic description of such a length scale has yet been formulated. We critically evaluate the hypothesis that correlated structural defects could underlie the growing relaxation time in deeply supersaturated fluid. Though a clear structural signature of a developing order in these systems is found, the resulting defect geometry does not lead quite match the Frank- Kasper defect scenario. The dimensionally generalizable nature of the defects, however, make them promising options for defining static observables.

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