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Examination of Various Mobility Intervals to Establish Multiple Dynamic Time Scales in Supercooled Liquids DILLON SANDERS, JACOP EAPEN, None — Investigations of string-like cooperative motion in supercooled liquids have mostly considered the fastest-moving, or most mobile, particles in the system. Previous analysis has noted the close association of the time scales associated with strings formed by these highly-mobile particles to the peak time of the non-Gaussian parameter, and by extension the alpha-relaxation time that characterizes the cage-breaking regime that occurs before the onset of diffusive motion. More recent work has uncovered the existence of other dynamic time scales in glassy systems that are associated with the dynamics of particles with very low mobility. In this work we consider the cooperative motion of particles over a wide range of mobilities, from the fastest-moving particles to those that are relatively slow, and establish the existence of multiple dynamic time scales arising from particular mobility intervals. We discuss the relationship between these time scales and other characteristic times of the system, such as the structural relaxation time associated with viscosity. Our analysis intends to shed light on the idea that the dynamics of less-mobile particles is the driving force behind the structural relaxation of glass-forming systems.

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None

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