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Multiple non-ergodic transitions in supercooled liquids[1] RACHEL AGA, JAMES MORRIS[2], Oak Ridge National Laboratory, VALENTIN LEVASHOV, TAKESHI EGAMI[3], University of Tennessee — We present simulation results for a simple model supercooled liquid showing changes in behavior of properties resulting to the observed onset of ergodicity loss within the timescale of the simulation, the breakdown of hydrodynamic flow in the liquid, and the double-peak formation in g(r). We find that these changes all occur at the same temperature. The identification of a common crossover temperature suggests the existence of significant changes in dynamics at that temperature. The crossover temperature identified is different from the critical temperature defined in mode coupling theory (MCT) as it occurs at a much higher temperature. Thus, in this work, we demonstrate that prior to glass transition are two distinct changes in behavior: a lower temperature transition associated with MCT and a higher temperature transition associated with the onset of ergodic to nonergodic behavior.

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