Self-consistent approach in the microdynamics description of supercooled liquids and glasses

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Abstract

A study of the microdynamics of supercooled liquids and glasses is executed through calculations of the dynamic structure factor $S(k, \theta)$. The theory developed on the basis of a self-consistent approach in the framework of the memory function formalism is applied to define the frequency spectra $(m/k_B T)S(k, \theta)$ of supercooled argon at the temperature $T = 5$ K for the wavenumber region from 2 to 8.5nm-1. The results obtained are in good agreement with the molecular dynamics simulation data. © Pleiades Publishing, Inc., 2006.