COLLECTIVE EFFECTS IN THE SELF-DIFFUSION PROCESS IN LIQUIDS

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The collective contributions to the self-diffusion process in liquids are estimated with the help of the Lagrange theory of thermal hydrodynamic fluctuations. It is shown that the relative value of the collective part of the self-diffusion coefficient changes approximately from 20% for simple liquids up to 50% for strongly associated ones. The low-frequency behavior of the spectral densities for the velocity autocorrelation function in liquid argon and water is successfully reproduced.