

Density spectrum analysis of supercritical fluid

N. Lazarev and A. Bakai

*NSC Kharkiv Institute of Physics and Technology, 1 Akademichna Str.,
61108 Kharkiv, Ukraine, E-mail: n.lazarev@kipt.kharkov.ua*

The fluctuations of fluid density beyond the critical point can be very large due to diverging compressibility. Molecular dynamics (MD) simulation shows that the distribution function of these fluctuations differs from Gaussian, which indicates that the fluid is heterogeneous. We describe a general approach to analyze the density spectra, which reduces the problem to the solution of an integral equation. The n th-nearest-neighbor distribution functions in a uniform system are applied as base functions. The high-accuracy MD data of simulated argon are used to demonstrate the performance of the proposed method.