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A Molecular Dynamics Simulation of the Density Fluctuation of Diatomic Fluids around the Critical Point[1] SHOHEI IKAWA, Shinshu Univ., TAKASHI TOKUMASU, Tohoku Univ., NOBUYUKI TSUBOI, Kyushu Institute of Technology, HIROKI NAGASHIMA, Tohoku Univ., SHIN-ICHI TSUDA, Kyushu Univ. — In this study, we evaluated the density fluctuation of diatomic fluids around the critical point. We simulated the density fluctuation of 2-Center-Lennard-Jones (2CLJ) fluids, which have molecular elongations as one of the parameters, by Molecular Dynamics (MD) method. We focused on the effect of anisotropy of diatomic fluid on fluctuation structure to evaluate the principle of corresponding state of the density fluctuation. As the evaluation methods, we calculated the dispersion of number of molecules at certain domain and also computed static structure factor. We calculated those values of diatomic fluids which have various molecular elongations to compare the difference of fluctuation structure of fluids. As results, the principle of corresponding state is satisfied because there is no significant difference in the fluctuation structure between fluids which have shorter molecular elongation and longer one. Hereafter, we are going to calculate the intermediate scattering function and dynamic structure factor to evaluate the principle of corresponding state of the density fluctuation in detail.

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Shohei Ikawa
Shinshu Univ

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