Vibrational model of excess entropy in dense two-dimensional fluids

Sergey Khrapak[1]

[1]Joint Institute For High Temperatures, Moscow, Russian Federation

A vibrational paradigm of atomic dynamic in dense fluids provides useful insight on the transport and thermodynamic properties of fluids in three dimensions. Here, a vibrational model is generalized to describe the excess entropy of two-dimensional (2D) fluids. A simple practical implementation of this model is demonstrated to deliver accurate results for various systems across different research fields, such as one-component plasmas with Coulomb and logarithmic interactions, a 2D fluid of dipole particles, and a 2D Yukawa fluid. The applicability limits, relevance to three-dimensional fluids, relations to other 2D phenomena, and potential practical applications are discussed.