

Interpolation model for heat capacity of dense liquids: Explaining generalized Rosenfeld-Tarazona scaling

Khrapak S. A.^{1,®} and Khrapak A. G.¹

¹ Joint Institute for High Temperatures of the Russian Academy of Sciences, Izhorskaya 13 Bldg 2, Moscow, 125412, Russia

® sergey.khrapak@gmx.de

Generalized Rosenfeld–Tarazona scaling predicts the power-law dependence of the excess heat capacity of simple liquids on temperature. Interpolation (sometimes also called two-phase) model treats a liquid as a superposition of gas- and solid-like components whose relative abundance is quantified by a liquid rigidity parameter. We demonstrate here that the generalized Rosenfeld–Tarazona scaling emerges naturally in the interpolation model from scale invariance of the liquid rigidity parameter. Several examples based on real and model liquids and fluids are presented, including a strongly coupled one-component plasma .