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Predicting long-time Brownian dynamics of ultrasoft colloid suspensions from thermodynamics MARK POND, The University of Texas at Austin, JEFFREY ERRINGTON, State University of New York at Buffalo, THOMAS TRUSKETT, The University of Texas at Austin — Suspensions of ultrasoft colloids, such as Gaussian-core particles and Hertzian spheres, have received significant research interest due to their reentrant melting behavior and dynamic anomalies. Many of the previous dynamic studies of these systems have focused on molecular dynamics simulations, which by their nature ignores the solvent medium. We have conducted Brownian dynamics simulations of these ultrasoft colloid suspensions to show their long-time dynamic behavior near the reentrant melting transition. In addition, we have developed a novel method for quantitatively and qualitatively predicting the long-time Brownian dynamics of ultrasoft colloidal suspensions from their thermodynamic properties.

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