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Coarse-Grained Description of Polymer Liquids and their Mixtures as Interacting Soft-Colloidal Particles MARINA GUENZA, University of Oregon, GALINA YATSENKO, EDWARD SAMBRISKI, MARIA NEMIROVSKAYA — We present a novel theoretical approach which maps polymer melts and their mixtures onto fluids of soft-colloidal particles. From liquid-state theory we derive analytical center-of-mass total pair correlation functions, which reproduce those computed from united-atom simulations with no fitting parameters. The coarse-grained description correctly bridges micro- and mesoscopic fluid properties. Molecular dynamics simulations of soft colloidal particles interacting through the calculated effective pair potentials are consistent with data from microscopic-scale simulations and analytical formulas.

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