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Phase behavior of repulsive polymer-tethered colloids BEHNAZ BOZORGUI, MAYA SEN, WILLIAM L. MILLER, JOSEP C. PAMIES, ANGELO CACCIUTO, Columbia University — We report molecular dynamics simulations of a system of repulsive, polymer-tethered colloidal particles. We use an explicit polymer model to explore how the length and the behavior of the polymer (ideal or self-avoiding) affect the ability of the particles to organize into ordered structures when the system is compressed to moderate volume fractions. We find a variety of different phases whose origin can be explained in terms of the configurational entropy of polymers and colloids. Finally, we discuss and compare our results to those obtained for similar systems using simplified coarse-grained polymer models, and set the limits of their applicability.

Behnaz Bozorgui
Columbia University

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