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Glass transition and dynamic scaling in soft repulsive particles: a mode-coupling theory study GRZEGORZ SZAMEL, Department of Chemistry, Colorado State University, LUDOVIC BERTHIER, Laboratoire des Colloides, Verres et Nanomateriaux, Universite Montpellier II , HUGO JACQUIN, Laboratoire Matiere et Systemes Complexes, Universite Paris 7, ELIJAH FLENNER, Department of Chemistry, Colorado State University — We combine the hypernetted chain approximation with the mode-coupling theory to analyze structure and dynamics of dense systems consisting of soft repulsive particles (harmonic spheres). We investigate the phase diagram for a broad range of temperatures and volume fractions. We find that in the vicinity of the T=0 mode-coupling transition for hard spheres, the dynamics obey a power-law form of dynamic scaling. We find that the critical MCT exponent describing the divergence of the relaxation time at the mode-coupling transition decreases with increasing volume fraction.

Grzegorz Szamel
Colorado State University

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