

Abstract Submitted
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Beyond the mode-coupling theory: a perturbative diagrammatic approach¹ GRZEGORZ SZAMEL, ELIJAH FLENNER, Department of Chemistry, Colorado State University — We analyze corrections to the mode-coupling theory of the glass transition, focusing on the self-consistent equation for the non-ergodicity parameter. We use a diagrammatic formulation of the dynamics of interacting Brownian particles². Our approach builds upon an earlier identification of a divergent contribution to a four-point correlation function³. We find that diagrams similar to those generating the divergence of the four-point function lead to divergent corrections to the mode-coupling theory's prediction for the long time limit of the irreducible memory function. We propose and investigate a new equation for the non-ergodicity parameter that self-consistently includes the diagrams leading to the divergent corrections.

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²G. Szamel, J. Chem. Phys. 127, 084515 (2007)

³G. Szamel, Phys. Rev. Lett. 101, 205701 (2008)

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