

Fluctuation Renormalization and Mode Coupling

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The fluctuation-dissipation theorem tells us something about noise on top of thermodynamic evolution equations. We often pretend that we have a choice to make use of or to ignore this noise. We here discuss the systematic procedures to extract deterministic equations with noise effects (fluctuation renormalization) in the context of mode coupling theory. Because the results of mode coupling theory depend strongly on the choice of variables, we try to develop a more objective version of this approach. We use the long-time tails of hydrodynamics for illustration.