

Abstract Submitted
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Effect of bath temperature on the decoherence of quantum dissipative system¹ WEI WU, Beijing Computational Science Research Center — We report an anomalous decoherence phenomenon of quantum dissipative system in the framework of stochastic decoupling scheme along with hierarchical equations of motion formalism without Born, Markovian and weak coupling approximations. It is found that the decoherence of a two-qubit spinboson model can be reduced by increasing the bath temperature in strong coupling regimes. For weak coupling situation, we find that the bath temperature may enhance the decoherence. This result is contrary to the common recognition that a higher bath temperature always induces a severer decoherence and suggests that a decoherence dynamical transition occurs in this two-qubit spin-boson model. We also demonstrate that the critical transition point can be characterized by the behavior of the frequency spectrum of quantum coherence indicator.

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