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Influence of non-gaussian statistics and dynamic non-locality in temporal evolution of open quantum systems CARLOS FLOREZ, LEONARDO PACHÓN, Univ de Antioquia — The study of quantum dissipation and non-local dynamics in phase space demands an extension of the Ullersma-Caldeira-Leggett framework to include non-linearities either in the system or the bath or even in the couplings between them. In this work, the special case of a linear open system interacting with a harmonic thermal bath by means of non-linear couplings is considered. This framework is constructed by extending the path integral formulation into phase space and applying the Feynam-Vernon influence functional theory to study the perturbative regime at different orders in the couplings. In doing so, the formal correspondence between the perturbative contributions and the Feynman diagrams that arise from the n-point correlation functions in the canonical variables are used. The effect of the non-local behavior induced by the non-linear contributions on the dissipative and decohering mechanisms are analyzed. The main features are the presence of non-Gaussian statistics and multiplicative, instead of additive, noises.

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