

Abstract Submitted  
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**Non-Markovian thermalization for a few qubit system** PEDRO MANRIQUE, FERNEY RODRIGUEZ, Universidad de los Andes — Non-Markovian dynamics in the thermalization process of a single and coupled-qubit systems are analyzed by means on an effective master equation. Memory effects are included in a time dependent relaxation constant which is obtained from a proper bosonic bath spectral function. For different initial states, the population and qubit coherences are studied as a function of the qubit-bath coupling strenghts and bath temperature. Clear signatures of non-exponential decays for the qubit density matrix elements are found in a short-time regime corresponding to the back action of the qubit system on the bath dynamics. In the case of realistic two-qubit systems, such as quantum dots, entanglement oscillations should be observable.

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