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Coherent control of the dynamics of entropy uncertainty of qubits in a dissipative environment

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Abstract

In this paper, we study the entropy uncertainty of a composite system consisting of two identical non-interactive subsystems. Each subsystem separately consists of a qubit inside a leaky cavity. It is assumed that the considered qubits independently and simultaneously interact with an external classical field and vacuum electromagnetic modes of their respective cavities. The study suggests that intensity (Rabi frequency) and detuning of the classical field have a significant effect on the dynamics of entropy uncertainty of the total system. So by increasing the intensity of the classical field, entropy uncertainty can be maintained small for a long time. Moreover, it is revealed that the more we increase the detuning, the less time is required to the uncertainty of the system experiences the steady state.

Keywords: qubit, classical field, entropy uncertainty, cavity

For full article, refer to the Persian section