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Entanglement of a Damping Nanomechanical Resonators

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Abstract:

We discuss the dynamics of interaction between a multi-qubit system (Cooper-pair boxes) and a nanomechanical resonator. An investigation of entanglement in a Markovian and non-Markovian regimes is presented. Evolution equation of entanglement for a lower bound when the nanomechanical resonator starts from a mixed state is derived. We focus on the dynamics of one, two and three qubits when the qubits are affected by an intrinsic decoherence. It is shown that maximum entanglement is governed by the decoherence parameter, which embodies phase and amplitude damping acting within the system. Finally, new type of oscillations employing different entanglement measures is introduced.

Keywords: Entanglement; Nanomechanical Resonators

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