

Abstract Submitted
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Understanding the role of counter-rotating terms of Rabi Model under dissipation RESUL ERYIGIT, FERDI ALTINTAS, Department of Physics, Abant Izzet Baysal University, Bolu, Turkey. — Rabi Hamiltonian is one of the most complete quantum mechanical models that describe the interaction of a qubit with a quantized field which became more relevant with the recent developments in the circuit QED technologies that made possible to obtain strong coupling in the field-qubit interactions. In the dissipative regime, the standart Lindbladian quantum optical master equation with Rabi Hamiltonian leads to unphysical effects such as an increase of total excitation number in the qubit-field system with increasing cavity decay rate. Recently, a new Liouville superoperator describing the loses of the system have been derived [F.Beaudoin, J.M.Gambetta, A.Blais, Phys. Rev. A 84, 043832 (2011)] at the ultrastrong coupling regime. In this study, by using the new dissipators for cavity loses, we have investigated the role of counter-rotating terms on the dynamics of entanglement and quantum discord at ultrastrong coupling regime and provided a comprehensible picture for the role of counter-rotating terms on quantum correlations. Contrary to the standart dissipators case, the steady-state of the system is found to contain non-zero entanglement.

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