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Two-Photon Jaynes-Cummings Model Governed by Milburn Equation with Phase Damping

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Abstract: In this paper, we find an analytic solution of the master equation of a non-resonant two-photon Jaynes-Cummings model (JCM) with phase damping with the help of the super-operator technique. We study the influence of phase damping on non-classical effects in the JCM, such as oscillations of the photon-number distribution, revivals of the atomic inversion, and sub-Possion photon statistics. It is demonstrated that the phase damping suppresses the revivals of the atomic inversion and non-classical effects of the cavity field in the JCM.

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Key words: Jaynes-Cummings model (JCM), Milburn equation, phase damping

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