Solving Generalized Non-degenerate Two-Mode Two-Photon Jaynes-Cummings Model by Supersymmetric Unitary Transformation

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Abstract: Based on supersymmetric quantum mechanics theory, we introduced a supersymmetric unitary transformation to diagonalize the Hamiltonian of non-degenerate two-mode two-photon Jaynes-Cummings models which include any forms of intensity-dependent coupling, field-dependent detuning, and field nonlinearity. Its eigenvalue, eigenstates, and time evolution of state vector are obtained.

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