

A Position-Dependent Two-Atom Entanglement in Real-Time Cavity QED System

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Abstract: We study a special two-atom entanglement case in assumed cavity QED experiment in which only one atom effectively exchanges a single photon with a cavity mode. We compute two-atom entanglement under position-dependent atomic resonant dipole-dipole interaction (RDDI) for large interatomic separation limit. We show that the RDDI, even that which is much smaller than the maximal atomic Rabi frequency, can induce distinct diatom entanglement. The peak entanglement reaches a maximum when RDDI strength can compare with the Rabi frequency of an atom.

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Key words: two-atom entanglement, cavity QED, RDDI

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