

Transferring of a Two-Mode Entangled State Between Two Cavities via Cavity QED

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Abstract: We propose a scheme for transferring of a two-mode entanglement of zero- or one-photon entangled states between two cavities via atom-cavity field resonant interaction. In our proposal, in order to transfer the entangled state, we only need two identical two-level atoms and a two-mode cavity for receiving the teleported state. This scheme does not require Bell-state measurement and performing any transformations to reconstruct the initial state. And the transfer can occur with 100% success probability in a simple manner. And a network for transferring of a two-mode entangled state between cavities is suggested. This scheme can also be extended to transfer N-mode entangled state of cavity.

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Key words: transfer, cavity QED, quantum entanglement, resonant interaction

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