

An Alternative Scheme for Transferring Quantum States and Preparing a Quantum Network in Cavity QED

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Abstract: An alternative scheme is proposed to transfer quantum states and prepare a quantum network in cavity QED. It is based on the interaction of a two-mode cavity field with a three-level V-type atom. In the scheme, the atom-cavity field interaction is resonant, thus the time required to complete the quantum state transfer process is greatly shortened, which is very important in view of decoherence. Moreover, the present scheme does not require one mode of the cavities to be initially prepared in one-photon state, thus it is more experimentally feasible than the previous ones.

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Key words: quantum states transfer, quantum network, cavity QED

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