

论文

基于Cluster态和Bell态的任意三粒子态远程制备

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摘要:

本文提出了一个新颖的基于四粒子cluster态和Bell态制备任意三粒子远程制备方案.在发送者(Alice)对自己手中的粒子做正交完备测量,接受者(Bob)对自己手中的粒子做适当的么正变换后,任意三粒子远程制备成功.对于Alice的两种不同的正交完备基测量的情况,分别计算了远程制备成功的概率.另外,本方案成功制备的概率在一般情况和一些特殊情况下是可以计算的.分析结果表明:在一般情况下,远程态制备可以以1/8的概率实现;但在一些特殊情况下,成功的概率可以提高到1/4、1/2,甚至1.

关键词: 远程制备 正交完备基 任意三粒子态

Remote State Preparation of Arbitrary Three-qubit State via Cluster State and Bell State

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Abstract:

A novel scheme for remote preparation of an arbitrary three-qubit state using four-qubit cluster state and Bell state is proposed. The three-particle state can be perfectly prepared if the sender (Alice) performs the orthogonal complete measurement on her particles and the receiver (Bob) introduces an appropriate unitary transformation on his particles. For the two cases of remote state preparation, two different projective measurement bases are constructed at sender's side and the corresponding success probabilities are calculated. The probability of success regarding this preparation scheme is calculated in both general and some particular cases. It is that in general such remote state preparation can be realized with a probability of 1/8. But in several special cases, the probability of success can be improved to 1/4, 1/2 or even 1.

Keywords: Remote state preparation Orthogonal complete measure bases Arbitrary three-qubit state

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