论文

三个两能级原子与数态场相互作用的纠缠特性

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摘要：

通过计算并发度和线性熵研究了初始处于GHZ态的三个两能级原子与数态场相互作用系统的纠缠动力学特性,讨论了场的初始光子数对并发度和线性熵的影响.结果表明,腔内两原子之间的纠缠出现突然产生现象,而且可以通过改变场的初始光子数来控制产生纠缠的阈值时间和纠缠的最大值.对腔外原子的探测导致了并发度随时间的演化呈现周期性规律,场的光子数的增加不但减小了并发度的最大值,而且缩短了并发度的演化周期.

关键词： 并发度　线性熵　纠缠突然产生　量子信息

Entanglement Properties of Three Two-level Atoms System Interacting with a Fock State Field

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Abstract:

The dynamics of entanglement of three two-level atoms initially in GHZ state system interacting with a Fock state field are investigated by means of concurrence and linear entropy. The effect of photon number on the time evolution of concurrence and linear entropy is analyzed. The results show that the phenomenon of sudden birth of entanglement between two atoms trapped in a cavity occurs and the threshold time and maximum for the creation of the entanglement can be controlled by the photon number. The measurement of the atom outside the cavity leads to the periodic evolution of the concurrence and an increase of the photon number results in decreasing in the maximum of concurrence and shortening of the evolution period of the time behavior of concurrence.

Keywords: Concurrence　Linear entropy　Entanglement sudden birth　Quantum information

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