量子光学

线性及非线性介质腔中量子纠缠动力学特征

杜少将　夏云杰

1济宁学院物理与信息工程系，　山东　曲阜　273155 2曲阜师范大学物理工程学院，　山东　曲阜　273165

摘要：　如何抑制纠缠突然死亡现象的发生对提高量子纠缠动力学演化性能具有极大地意义，初始纠缠原子分别与非线性N-J-C模型及J-C模型进行相互作用，运用共生纠缠的度量方法分析非线性、耦合强度以及失谐量对纠缠原子动力学演化的影响，寻找避免纠缠突然死亡发生条件。在J-C模型中原子在纠缠演化中发生纠缠突然死亡现象；然而在N-J-C模型中利用介质的非线性和失谐量的影响可以避免纠缠突然死亡的发生，而且一定程度上几乎可以恢复到原子间纠缠的初始值。

关键词：　量子光学　纠缠突然死亡的控制　共生纠缠度　J-C模型　N-J-C模型

Characteristics of entanglement dynamics in linear and nonlinear cavity

Du Shao-jiang,　Xia Yun-jie

1 Physics and Information Engineering Department, Ji-ning University, Shandong Qufu 273155, China；2 Shandong Provincial Key Laboratory of Laser Polarization and Information Technology, Department of Physics, Qufu Normal University, Qufu 273165, China

Abstract: It is significant that how to improve the property of quantum entanglement dynamics evolution by controlling the happening of entanglement sudden death. Initially entangled atoms interact with Jaynes-Cummings (J-C) model and Nonlinear Jaynes-Cummings (N-J-C) model respectively. Using the method of concurrence we researched the effect of nonlinearity and coupling of atom-field in N-J-C model and the effect of detuning. The purpose is to find how to avoid the happening of entanglement sudden death. It shows that the phenomenon of entanglement sudden death appears in J-C model, however the meaningful result is that entanglement sudden death vanishes in N-J-C model by using the effect of nonlinearity and detuning in a certain condition. And in addition, it can almost make the atoms entanglement degree reach to the original values.

Keywords: Quantum optics　controlling of entanglement sudden death　concurrence　J-C model　N-J-C model

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