

Scheme for Robust Storage of Multi-particle Entanglement with a Cavity QED System

CHEN Chang-Yong,^{1,2} LI Shao-Hua,¹ and GAO Ke-Lin²

¹ Department of Physics and Electronics Information and Engineering, Hunan Institute of Humanity and Science and Technology, Loudi 417000, China

² State Key Laboratory of Magnetic Resonance and Atomic and Molecular Physics, Wuhan Institute of Physics and Mathematics, the Chinese Academy of Sciences, Wuhan 430071, China

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Abstract: We propose a scheme for robustly storing multi-atom entangled states involving Bell states, three-particle W-state, n-particle W-like-states, generalized multi-particle W-states, n-particle GHZ-states, and partially entangled states in cavity QED. Our scheme can preserve the internal structure of the entangled states above, with only generation of a global phase corresponding to each of entangled states during the storage of them. One single-mode cavity and n identical two-level atoms are required. Our scheme may be realized in the present technology. The idea may be also utilized to store multi-trapped-ion entangled states in linear ion trap.

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Key words: Bell states, W-states, multi-particle entanglement

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