9th International Conference on

Optics, Photonics & Lasers

July 02-04, 2018 | Berlin, Germany

Entanglement state transmission without calibrate reference frame

Peng Liang Guo, Lu Cong Lu and Fu Guo Deng Beijing Normal University, China

Entanglement is a very important quantum resource in quantum communication, which guarantees the security of communication and has many important applications in quantum communication, such as quantum key distribution, quantum teleportation, and quantum dense coding. We demonstrated a theoretical entanglement state transmission scheme using time-bin operations. The scheme is robust against the instability of the reference frame between two parties, and can be extended to Greenberger-Horne-Zeilinger (GHZ) states without shared reference frame (SRF). When Pockels cells are used in the scheme, the success probability can be improved to 100%. The entanglement states are shared between many parties with no shared reference frame, which is significant for quantum communication and the construction of a long-distance communication networks.

Recent Publications

- 1. Jiang Y X, Guo P L, Gao C Y, Wang H B, Alzahrani F, Hobiny A et al. (2017) Self-error-rejecting photonic qubit transmission in polarization-spatial modes with linear optical elements. Science China Physics Mechanics & Astronomy 60(12):120312.
- 2. Gao C Y, Wang G Y, Zhang H and Deng F G (2017) Multi-photon self-error-correction hyperentanglement distribution over arbitrary collective-noise channels. Quantum Information Processing 16(11):1-14.
- 3. Fu Guo Deng, Bao Cang Ren and Xi Han Li (2016) Quantum hyperentanglement and its applications in quantum information processing. Science Bulletin 62(1):46-68.
- 4. Tao Li and Fu Guo Deng (2016) Error-rejecting quantum computing with solid-state spins assisted by low-Q optical microcavities. Physical Review A 94:062310.
- 5. Guan Yu Wang, Qian Liu and Fu Guo Deng (2016) Hyperentanglement purification for two-photon six-qubit quantum systems. Physical Review A 94:032319.

Biography

Peng Liang Guo is a second year PhD student in Department of Physics at Beijing Normal University, P R China. Her research direction is Quantum Optics. She focuses on quantum state error rejection transmission and experimental technologies in quantum information process.

973256654@qq.com

Notes: