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Quantum teleportation, quantum scissor and quantum transcription

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Abstract content
   (Max 300 words)

Quantum teleportation is a process by means of which quantum information is transmitted from one location to another without transmitting the information carrier itself. The fragile nature of quantum systems and nearly omnipresent dissipative environments make it challenging to perform quantum teleportation in real systems. However, photonic systems are less susceptible to the environmental effects. We present here a photonic teleportation scheme based on quantum transcription". A qudit encoded into a single excitation of d light modes (in our case Laguerre-Gaussian modes which carry orbital angular momentum) is transcribed to d mono-rail photonic qubits, which are spatially separated. Each mono-rail qubit consists of a superposition of vacuum and a single photon in each one of the modes. After successful teleportation of each of the d mono-rail qubits by means ofQuantum Scissors" they are converted back into a qudit carried by a single photon which completes the teleportation scheme.

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