

Probabilistic Teleportation of a Three-Particle GHZ State via Two Three-Particle Entangled W States

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Abstract: A scheme for teleporting an unknown three-particle GHZ state from a sender to either one of two receivers is proposed. In this scheme, the quantum channel is composed of two non-maximally three-particle entangled W states. An unknown three-particle GHZ state can be perfectly teleported probabilistically if the sender performs two generalized Bell-state measurements and the Hadamard operation while either one of two receivers introduces an ancillary particle which is one of the final three particles constituting the teleported state, then performs the controlled-not operation with the ancillary particle as the target bit and introduces an appropriate unitary transformation with the help of the other receiver's simple measurements. All kinds of unitary transformations are given in detail. The present scheme may be directly generalized to teleport an unknown multiparticle GHZ state via two three-particle entangled W states used as the quantum channel.

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Key words: probabilistic teleportation, three-particle entangled state, partially three-particle entangled W state, unitary transformation

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