Probabilistic Teleportation of an Arbitrary Two-Particle State and Its Quantum Circuits

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Abstract: Two simple schemes for probabilistic teleportation of an arbitrary unknown two-particle state using a non-maximally entangled EPR pair and a non-maximally entangled GHZ state as quantum channels are proposed. After receiving Alice's Bell state measurement results, Bob performs a collective unitary transformation on his inherent particles without introducing the auxiliary qubit. The original state can be probabilistically teleported. Meanwhile, quantum circuits for realization of successful teleportation are also presented.

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