Controlled teleportation with the control of two groups of agents via entanglement.

Summary: We present a way for implementing controlled teleportation of an arbitrary unknown pure state of a qutrit with the control of two groups of agents via entanglement. In our proposal, the sender can successfully teleport the qutrit state to a distant receiver with the help of all agents. However, if one agent in each group does not cooperate, the receiver cannot gain any information (including amplitude information or phase information or both) about the qutrit state to be teleported. Since a qubit is a special case of a qutrit when the state lies in a fixed two-dimensional subspace of the qutrit, the present proposal can be also applied in the implementation of controlled teleportation of an arbitrary unknown pure state of a qubit with many control agents in two groups. We note that our proposal is the first one to use two groups of agents to achieve controlled teleportation.

Keywords: controlled teleportation; entanglement; agent; qutrit; qubit
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