

Unidirectional Quantum Remote Control: Teleportation of Control-State

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Abstract: We investigate the problem of teleportation of unitary operations by unidirectional control-state teleportation and propose a scheme called unidirectional quantum remote control. The scheme is based on the isomorphism between operation and state. It allows us to store a unitary operation in a control state, thereby teleportation of the unitary operation can be implemented by unidirectional teleportation of the control-state. We find that the probability of success for implementing an arbitrary unitary operation on arbitrary M -qubit state by unidirectional control-state teleportation is 4^{-M} , and $2M$ ebits and $4M$ cbits are consumed in each teleportation.

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Key words: teleportation, quantum remote control, unidirectional

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