Quantum Physics

Economical (k,m)-threshold controlled quantum teleportation

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We study a (k,m)-threshold controlling scheme for controlled quantum teleportation. A standard polynomial coding over GF(p) with prime p > m-1 needs to distribute a d-dimensional qudit with d >= p to each controller for this purpose. We propose a scheme using m qubits (two-dimensional qudits) for the controllers' portion, following a discussion on the benefit of a quantum control in comparison to a classical control of a quantum teleportation.

Comments:	11 pages, 2 figures, v2: minor revision, discussions improved, an equation corrected in procedure (A) of section 4.3, v3: major revision, protocols extended, citations added, v4: minor grammatical revision, v5: minor revision, discussions extended
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