2004 Vol.42 No.2 pp.223-228 DOI:

Quantum Logic Networks for Probabilistic and Controlled Teleportation of Unknown Quantum States

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(Received: 2003-12-17; Revised:)

Abstract: We present simplification schemes for probabilistic and controlled teleportation of the unknown quantum states of both one particle and two particles and construct efficient quantum logic networks for implementing the new schemes by means of the primitive operations consisting of single-qubit gates, two-qubit controlled-not gates, Von Neumann measurement, and classically controlled operations. In these schemes the teleportation are not always successful but with certain probability.

PACS: 03.67.-a, 03.67.Hk

Key words: quantum logic network, probabilistic and controlled teleportation