

Quantum Physics

A Measurement-Based Form of the Out-of-Place Quantum Carry-Lookahead Adder

Agung Trisetyarso, Rodney Van Meter, Kohei M. Itoh

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We present the design of a quantum carry-lookahead adder using measurement-based quantum computation. The quantum carry-lookahead adder (QCLA) is faster than a quantum ripple-carry adder; QCLA has logarithmic depth while ripple adders have linear depth. Our design is evaluated in terms of number of time steps and the total number of qubits used.

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