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Efficiency of Open Quantum Walk implementation of the Dissipative Quantum Computing

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Abstract content
   (Max 300 words)

A new type of the quantum walk, exclusively based on dissipative dynamics is presented. An application of this open quantum walk for dissipative quantum computing is suggested. The approach is illustrated with the examples of the Toffoli gate and the Quantum Fourier Transform for 3 and 4 qubits. It is explicitly demonstrated that the open quantum walk based algorithms are more efficient than the traditional dissipative quantum computing approach. In particular, the open quantum walks can be designed to converge faster to the desired steady state and to increase the probability of detection of the outcome of the computation.

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