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Generation of elementary gates and Bell 's states using controlled adiabatic evolutions (Article)

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Abstract

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Fundamental quantum gates can be implemented effectively using adiabatic quantum computation or circuit model. Recently, Hen combined the two approaches to introduce a new model called controlled adiabatic evolutions [I. Hen, Phys. Rev. A, 91(2) (2015) 022309]. This model was specifically designed to implement one and two-qubit controlled gates . Later, Santos extended Hen's work to implement n-qubit controlled gates [A. C. Santos and M. S. Sarandy, Sci. Rep., 5 (2015) 15775]. In this paper, we discuss the implementation of each of the usual quantum gates , as well as demonstrate the possibility of preparing Bell 's states using the controlled adiabatic evolutions approach. We conclude by presenting the fidelity results of implementing single quantum gates and Bell 's states in open systems. © 2019 World Scientific Publishing Company.

SciVal Topic Prominence

Topic: Graphs (charts) | Quantum optics | Discrete-time quantum

Prominence percentile: 92.971

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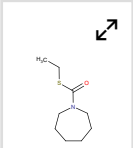

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