

Close

Web of Science  
Page 1 (Records 1 -- 1)

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**Record 1 of 1****Title:** Generation of elementary gates and Bell's states using controlled adiabatic evolutions**Author(s):** Benmachiche, A (Benmachiche, Abderrahim); Sellami, A (Sellami, Ali); Turaev, S (Turaev, Sherzod); Bahloul, D (Bahloul, Derradjji); Messikh, A (Messikh, Azeddine); Wahiddin, MR (Wahiddin, Mohamed Ridza)**Source:** INTERNATIONAL JOURNAL OF QUANTUM INFORMATION **Volume:** 17 **Issue:** 3 **Article Number:** 1950020 **DOI:** 10.1142/S0219749919500205 **Published:** APR 2019**Times Cited in Web of Science Core Collection:** 0**Total Times Cited:** 0**Usage Count (Last 180 days):** 0**Usage Count (Since 2013):** 0

**Abstract:** 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.

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Page 1 (Records 1 -- 1)

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