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Quantum batteries charging using chain-STIRAP technique

M Saadati-Niari^{1*}, A Kamali Ali-Babaloo¹, and N Shirkhanghah²

1. Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, Iran
Faculty of Sciences, Islamic Azad University, Khalkhal Branch, Khalkhal, Iran

E-mail: m.saadati@uma.ac.ir

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Abstract

In this article, a scheme for charging quantum batteries using the chain-STIRAP technique is proposed. For this purpose, first, a five-level quantum battery is considered and four pulses are used to charge this battery. It has been shown that by properly adjusting the maximum intensity and the time delay between pulses, the conditions of the chain-STIRAP technique can be established and charged the five-level quantum battery properly, so that the maximum amount of ergotropy is achieved. In this scheme, small changes in the parameters of the pulses, including the time delay between the pulses and the maximum value of the pulses, do not have much effect on the final ergotropy of the system. It is also shown that the proposed method in this scheme can be extended to charge quantum batteries with more than five levels.

Keywords: quantum battery, charging, ergotropy, chain-STIRAP

For full article, refer to the Persian section