

A model of quantum communication device for quantum hashing

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Abstract

In this paper we consider a model of quantum communications between classical computers aided with quantum processors, connected by a classical and a quantum channel. This type of communications implying both classical and quantum messages with moderate use of quantum processing is implicitly used in many quantum protocols, such as quantum key distribution or quantum digital signature. We show that using the model of a quantum processor on multiatomic ensembles in the common QED cavity we can speed up quantum hashing, which can be the basis of quantum digital signature and other communication protocols.

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