

List of changes

paper 2553-F

Hilbert-Schmidt measure of pairwise quantum discord in three qubit X states

by M. Daoud et al

Dear editor,

We revised the paper according the referee's comments. We added all his suggested improvements. We would like to thank the referee for his constructive remarks.

Concerning the comment:

But when preparing the final version of the manuscript, the authors may consider to include some more explicit details on the applications and on the physical implications of their choices of the X -states, to make it easier to read.

our reply:

In the beginning of the second section, we added a short paragraph

X states of two qubits have already found applications in many studies of entanglement and discord [12-27]. ... This is of crucial importance in analyzing the decoherence effects induced by the environment in such systems.

quoting some references to give an overview of the relevance of the X states from a theoretical as well experimental point of views.

Concerning the comment:

More careful introductions of the notions of quantum discord and its measures and on the monogamy property may also make the paper easier to follow.

our reply:

In the beginning of the third section, we discuss briefly the concept of quantum discord quoting the related pioneer works. Thus we added the following paragraph:

A bipartite quantum system exhibits quantum correlation if its two subsystems contain more information than taken separately ... In this paper we shall especially consider the geometric discord variant based on Hilbert-Schmidt norm [10].

Similarly, concerning the notion of the monogamy, we added (in the beginning of section 4):

The quantum correlation can be transferred between the components of a quantum system comprising many parties. This shareability ... bipartite correlation between the qubit 1 and the subsystem containing the qubits 2 and 3.