

Efficient numerical method to calculate three-tangle of mixed states

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(Submitted on 31 Dec 2009)

We demonstrate an efficient numerical method to calculate three-tangle of general mixed states. We construct a "energy function" (target function) for the three-tangle of the mixed state under certain constraints. The "energy function" (target function) is then optimized via a replica exchange Monte Carlo method. We have extensively tested the method for the examples with known analytical results, showing remarkable agreement. The method can be applied to other optimization problems in quantum information theory.

Subjects: **Quantum Physics (quant-ph)**

Cite as: [arXiv:1001.0067v1](#) [quant-ph]

Submission history

From: Lixin He [[view email](#)]

[v1] Thu, 31 Dec 2009 02:16:33 GMT (17kb)

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