Continuous-time quantum walks on the threshold network model

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(Submitted on 27 Feb 2010)

It is well known that many real world networks have the power-law degree distribution (scale-free property). However there are no rigorous results for continuous-time quantum walks on such realistic graphs. In this paper, we analyze space-time behaviors of continuous-time quantum walks and random walks on the threshold network model which is a reasonable candidate model having scale-free property. We show that the quantum walker exhibits localization at the starting point, although the random walker tends to spread uniformly.

Comments: 12 pages
Subjects: **Quantum Physics (quant-ph)**
Cite as: **arXiv:1003.0055v1 [quant-ph]**

Submission history

From: Yusuke Ide [view email]
[v1] Sat, 27 Feb 2010 04:34:42 GMT (10kb)

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