

NCTS Seminar in Quantum Random Walks



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Titles

- 1. Quantum random walks with coin-space decoherence**
- 2. An ergodic theorem for quantum operations**
- 3. A path integral approach to coherent quantum random walks**

Abstract

The recent development of quantum computing and information has drawn great attentions among physicists, computer scientists and mathematicians. Motivated by this development, quantum random walks have been introduced as its counterpart as the classical random walks in various applications. In these talks, I will review the key properties of quantum random walks and present some of the results obtained by me and collaborators. The goal of this series is to focus on the fundamental principles and the methods of the subject in mathematical form so that students and mathematicians from other fields can easily enter this research area. No prerequisite is necessary.

In the first talk, I will discuss the principles of quantum statistical mechanics, quantum algorithms, and review quantum random walk and its decoherence. In the second talk, I will discuss our recent works on ergodic theorems of quantum operations which can be viewed as generalizations of the classical ergodic theorems for Markov chains. Part 3 of my talks will be on the properties of coherent quantum random walks.

Time |
Mar 11 (Fri), Mar 14 (Mon) / Mar 21 (Mon) 10:30-11:45

Venue |
Rm 440, Astro-Math. Building, NTU

Organizers |
Chih-Chung Chang (NTU) / Yuan-Chung Sheu (NCTU)