

**Department of Physics
&
Centre for Nonlinear Studies
&
Institute of Computational and Theoretical Studies**
JOINT COLLOQUIUM

Network Vulnerability to Extreme Events

BY

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Date: 17 December 2012 (Monday)
Time: 3:15 p.m. – 4:15 p.m.
Venue: T909, Science Tower
Hong Kong Baptist University

Abstract: Random walk on discrete lattice models is important to understand various types of transport processes. The extreme events, defined as exceedences of the flux of walkers above a prescribed threshold, have been studied recently in the context of complex networks [1, 2].

We also explore the network failure mechanism based on the extreme events on the nodes in the network. After encountering an extreme event, a node stops working and is no longer active in the network. The failure of a single node causes the redistribution of the walkers on the neighboring nodes. It enhances the load on rest of the nodes (active nodes) in network and consequently the probability of their failure due to extreme events. If these consequent failures are monitored, initially there is a slow decay of the number of active nodes which is followed by the almost sudden collapse of the entire network.

In this talk, I will elaborate on the nature of the network failure and robustness of the networks against the extreme events.

[1] V. Kishore, M. S. Santhanam and R. E. Amritkar, Phys. Rev. Lett. 106, 188701 (2011).

[2] V. Kishore, M. S. Santhanam and R. E. Amritkar, Phys. Rev. E 85, 056120 (2012).

The lecture will be conducted in English.

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Seats are LIMITED!

ALL are welcome to attend this lecture.