



THE CHINESE UNIVERSITY OF HONG KONG  
Institute of Network Coding  
and  
Department of Information Engineering  
*Seminar*



## Quantum Network Coding

By

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**Date : 30 March 2011 (Wednesday)**

**Time : 10:30 - 11:30 am**

**Venue : Room 833, Ho Sin Hang Engineering Building  
The Chinese University of Hong Kong**

### Abstract

Quantum information processing has been stimulating many fields since it has been founded by many researchers that the quantum mechanics offers us new ways of information processing such as fast algorithms, secure cryptosystems, and distributed computing. But in general, quantum information is much more difficult to handle than classical information. So it would be desirable if we could reduce a quantum part which is really needed to implement some useful quantum information processing. Here we have a motivation for studying "quantum" network coding: Can we reduce the amount of quantum information to be transmitted in some network by applying the idea of network coding ?

In this talk, I present recent studies on whether network coding is also useful for transmitting quantum information. First, I give an introduction for some basics of quantum information for non-quantum researchers. Second, I report some previous negative results on quantum network coding. Finally, some positive results are presented, which are roughly stated as follows: If classical network coding is possible on a multiple unicast network, then quantum network coding is also possible via some assisted classical information.

### Biography

Harumichi Nishimura received B.E., M.E. and Ph.D. degree from Nagoya University, Japan, in 1994, 1997 and 2001, respectively. He was a postdoctoral fellow from 2001 to 2005 in several places in UK, Canada, and Japan. He has been a lecturer since 2006 in Graduate School of Science, Osaka Prefecture University. His research interest includes theory of quantum computation and information, complexity theory, and network coding.

**\*\*ALL ARE WELCOME \*\***