

Liu Bie Ju Centre for Mathematical Sciences  
City University of Hong Kong

## Mathematical Analysis and its Applications Colloquium

Organized by Prof. Ya Yan Lu and Prof. Roderick S. C. Wong

**Sync**

by

**Professor Ron CHEN**

Chair Professor of Electronic Engineering,  
Director of Centre for Chaos and Complex Networks  
City University of Hong Kong

Date : 9 February, 2017 (Thursday)  
Time : 4:30 pm to 5:30 pm  
Venue : Room B6605  
Blue Zone, Level 6, Academic 1 (AC1)  
City University of Hong Kong

### **ABSTRACT:**

This talk addresses the network synchronization problem. It is well known that the Laplacian spectrum of a complex network contains a great deal of information about the network topology and has significant effects on the network dynamics such as its synchronization. In this talk, the Laplacian spectra of general complex networks will be discussed, regarding their impacts on the network synchronizability. It will be shown that networks with optimal synchronizability are both homogenous and symmetric. To that end, the number-theoretic congruence networks will be introduced, showing that they have particularly good sync-controllability and strong robustness against hostile attacks.

Light refreshments will be provided before the colloquium from 4:00 pm to 4:30 pm.  
Please come and join us!

**\*\* All interested are welcome \*\***

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