



*Institute of Mathematical Research  
Department of Mathematics*

## INFORMATION THEORY SEMINAR

**Topics:** Any mathematical topics related to information and coding theory, including but not limited to Probability Theory, Stochastic Calculus, Statistics, Ergodic Theory, Dynamical Systems, Combinatorial Optimization, Network Flow Theory, Graph Theory.

**Organization:** For each seminar, one of the participants is expected to present on certain topic. Active participations from the audience are strongly encouraged.

**Schedule:** Every other Thursday 4:00-6:00PM starting from October 11, 2012 in Room 309, Run Run Shaw Building, HKU.

**Chaired by:** Dr. Guangyue Han, Department of Mathematics, The University of Hong Kong

The first talk will be delivered by Guangyue Han on October 11. The title and the abstract can be found as follows:

**Title:** Limit Theorems in Hidden Markov Models

**Abstract:** In this paper, under mild assumptions, we derive a law of large numbers, a central limit theorem with an error estimate, an almost sure invariance principle and a variant of the Chernoff bound in finite-state hidden Markov models. These limit theorems are of interest in certain areas of information theory and statistics. Particularly, we apply the limit theorems to derive the rate of convergence of the maximum likelihood estimator in finite-state hidden Markov models.

*All are welcome*