DEPARTMENT OF APPLIED MATHEMATICS
應 用 數 學 系

# The Hong Kong Polytechnic University
# Department of Applied Mathematics

# Colloquium

## Sumca: Simple, Unified, Monte-Carlo Assisted Approach to Second-order Unbiased MSPE Estimation

**by**

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## Abstract

We propose a simple, unified, Monte-Carlo assisted approach to second-order unbiased estimation of mean squared prediction error (MSPE) of a small area predictor. The proposed MSPE estimator is easy to derive, has a simple expression, and applies to a broad range of predictors that include the traditional empirical best linear unbiased predictor (EBLUP), empirical best predictor (EBP), and post model selection EBLUP and EBP as special cases. Furthermore, the leading term of the proposed MSPE estimator is guaranteed positive; the lower-order term corresponds to a bias correction, which can be evaluated via a Monte-Carlo method. The computational burden for the Monte-Carlo evaluation is much lesser, compared to other Monte-Carlo based methods that have been used for producing second-order unbiased MSPE estimators, such as double bootstrap and Monte-Carlo jackknife. Theoretical and empirical results demonstrate properties and advantages of the proposed MSPE estimator.

**Date : 27 December, 2017 (Wednesday)**
**Time : 3:00p.m. – 4:00p.m.**
**Venue : TU801, The Hong Kong Polytechnic University**

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