The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

An efficient reduced sampling Monte Carlo method for solving random and stochastic PDEs
by

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Abstract

In this talk, I shall present a newly developed reduced sampling Monte Carlo approach for wave scattering in random media and for general random PDEs (as well as stochastic PDEs). This approach is based on a multi-modes representation of the solution of the random PDE, as a result, the original random PDE is reduced to a finite number of almost deterministic PDEs with random source terms. Efficient numerical methods and solvers can be formulated for solving the reduced problems. The random Helmholtz equation and the random elastic Helmholtz equations, which govern respectively acoustic and elastic wave scattering in random media, will be discussed in detail to explain the main ideas of the proposed approach. Convergence analysis and numerical experiments will be presented to demonstrate the potential advantages of the proposed approach. If time permits, extension to random Maxwell equations and random diffusion equations will also be discussed. This is a joint work with Junshan Lin of Auburn University and Cody Lorton of University of West Florida, U.S.A.

Date : **4 January 2019 (Friday)**
Time : **11:00am – 12:00noon**
Venue : **TU801, The Hong Kong Polytechnic University**

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