THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Numerical Analysis Seminar

Bayesian Approach to Inverse Time-harmonic Acoustic Obstacle Scattering with Phaseless Far-filed Data

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Abstract

This talk concerns the Bayesian approach to inverse acoustic scattering problems of inferring the position and shape of a sound-soft obstacle from phaseless far-field data. Given the total number of obstacle parameters, the Markov chain Monte Carlo (MCMC) method is employed to reconstruct the boundary of the obstacle in a high-dimensional space, which usually leads to slow convergence and prohibitively high computational cost. We use the Gibbs sampling and preconditioned Crank-Nicolson (pCN) algorithm with random proposal variance to improve the convergence rate, and design an effective strategy for the surrogate model constructed by the generalized polynomial chaos (gPC) method to reduce the computational cost of MCMC. This talk is based on the joint works with Ju Ming, Xinping Gui and Guanghui Hu.

Date:	Jan. 17, 2024 (Wednesday)
Time:	3:00 – 4:00pm
Venue:	ZOOM: https://hku.zoom.us/j/ Meeting ID: 913 6532 3891 Password: 310656

All are welcome