THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Numerical Analysis Seminar

Normalizing Field Flow: Solving forward and inverse stochastic differential equations using Physics-Informed flow model

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Abstract

In this talk, we will introduce a Normalizing field flow model (NFF) to quantify uncertainty propagation in a unified framework for forward, inverse and mixed stochastic problems based on scattered measurements. We first build the NFF model for stochastic field by constructing a bijective transformation between Gaussian random filed and the target stochastic field. Then we train the invertible networks by maximizing the sum of the log-likelihood. Furthermore, to solve the SDEs, we encode the known physics, i.e., the form of the stochastic differential equation (SDE), into the architecture of NFF model and learn the unknown stochastic terms in the equations from data. We will demonstrate the performance of the new NFF model with several numerical examples.

Date: November 30, 2021 (Tuesday)
Time: 4:00 – 5:00pm (Hong Kong Time)
Venue: Room 210, Run Run Shaw Bldg., HKU
and
ZOOM: https://hku.zoom.us/j/
Meeting ID: 913 6532 3891
Password: 310656

Attendance limited
Register Now

All are welcome