



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

MATHEMATICS COLLOQUIUM

Data-Driven Stochastic Dynamics-Extracting Governing Laws & Detecting Critical Transitions

By

Prof. Jinqiao DUAN

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Abstract

The interaction of uncertainty and nonlinearity in complex systems is leading to fascinating dynamical phenomena, such as critical transitions between qualitatively different dynamical regimes. The availability of data and machine learning tools enables improved investigation of stochastic dynamics, especially in high dimensional and multiscale situations. The speaker will overview recent advances in extracting stochastic governing laws and in detecting the most probable transition pathways between metastable regimes.

Biography:

Prof. Jinqiao Duan is a chair professor at Great Bay University. He earned his PhD from Cornell University and was a postdoc at California Institute of Technology. He had been a professor in USA for many years before joining Great Bay University. His expertise is in stochastic dynamical systems and stochastic partial differential equations, and their interactions with or applications in geophysical systems, data science, and biological systems. His publications include two books “An Introduction to Stochastic Dynamics” and “Effective Dynamics of Stochastic Partial Differential Equations” (with Wei Wang). He was an Associate Director at the Institute for Pure and Applied Mathematics, UCLA, Los Angeles, USA, during 2011-2013.

Date : 13 September 2024 (Friday)

Time : 3:00pm – 4:00pm

Venue : Lecture Theater D (near Lift 22)

All Are Welcome!