



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**  
Department of Mathematics

**SEMINAR ON APPLIED MATHEMATICS**

**A multi-fidelity approach for kinetic equations  
with multiple scales and uncertainties**

by

**Prof. Liu LIU**

**The Chinese University of Hong Kong**

**Abstract**

Kinetic equations have broad applications in various fields, such as plasma physics, rarefied gas, astrophysics, environmental and social biological sciences. In this talk, we will consider a class of kinetic equations with uncertainties, including the Boltzmann, epidemic transport and Schrödinger equations with multiple scales and random parameters. We will utilize a multi-fidelity approach to design data-driven methods to efficiently solve above equations and show error estimates via the hypocoercivity analysis. These are joint works with collaborators including Lorenzo Pareschi, Xueyu Zhu, Shi Jin.

**Date : 19 February 2025 (Wednesday)**

**Time : 4:00p.m.-5:00p.m.**

**\*Venue: Room 4475 (Lift 25/26)**

*All are Welcome!*