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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Machine Learning Methods for the Study of Rare Events

By

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Abstract

Many problems in applied sciences can be described in terms of dynamical systems navigating over complex energy landscapes. Well-known examples include conformational changes of bio-molecules, chemical reactions, nucleation events during phase transitions, and extreme events that may lead to material or system failure, etc. Such events occur infrequently compared with the characteristic relaxation timescales of the underlying systems, yet the transitions themselves are often rapid and can have significant consequences. A central quantity in the study of rare events is the committor function, which characterizes the likelihood of reaching one metastable state before another and provides a natural reaction coordinate for describing the transitions. In this talk, I will discuss numerical methods for exploring complex energy landscapes and studying rare events, with particular emphasis on recently developed machine learning approaches for computing high-dimensional committor functions.

Date : 20 November 2026 (Friday)
Time : 10:30a.m.-11:30a.m.
Venue : Room 2464 (near Lift 25/26)

All are Welcome!