



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

MATHEMATICS COLLOQUIUM

Computational Multiscale Methods and Applications

By

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Abstract

Many practical problems, especially those arising from geosciences, have multiscale features due to medium heterogeneities, nonlinearity and coupling of multiple models. The goal of multiscale methods or numerical upscaling techniques is to compute the solutions of these complicated problems efficiently by constructing coarse scale equations for some dominant components of the solutions. In this talk, we will present the latest development of a class of multiscale methods, which make use of solutions of local problems to obtain coarse scale equations and have rigorous convergence theories. For nonlinear problems, the macroscopic parameters in the coarse scale equations can be computed efficiently by the use of deep learning techniques. We will discuss the general concepts and present some applications.

Date : 15 September 2023 (Fri)

Time : 3:00pm – 4:00pm

Venue : Lecture Theater F (Lifts 25/26)

All Are Welcome!