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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON APPLIED MATHEMATICS

Higher-order structure preserving low-rank methods for kinetic equations

By

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Abstract

Low-rank methods have proven their utility as a complexity reduction technique for kinetic equations, both in radiative transfer/radiation transport and plasma physics (see, e.g., the recent review article arXiv:2412.05912). Since the resulting low-rank factors are lower-dimensional, such methods can overcome the famous curse of dimensionality, which is usually the most severe constraint for performing kinetic simulations in practice. However, in their classic form these methods do not conserve any of the invariants or underlying conservation laws. In this talk we will present our work on developing structure preserving dynamical low-rank methods. In particular, we focus on our recently developed approach that is compatible with arbitrary high order methods. We will show a number of numerical results for problems from radiative transfer and plasma physics.

Date : 16 April 2026 (Thursday)
Time : 2:30p.m. - 3:30p.m.
Venue : Room 4475 (Lift 25/26)

All are Welcome!