



The Hong Kong University of Science & Technology

Department of Mathematics

PhD Student Seminar

**A Compact Fourth-order Gas-kinetic Scheme
for the Euler and Navier-Stokes Equations**

By

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Abstract

A fourth-order compact gas-kinetic scheme (GKS) is developed for the compressible Euler and Navier-Stokes equations under the framework of two-stage fourth-order temporal discretization and Hermite WENO (HWENO) reconstruction. The key idea is the usage of the time dependent gas distribution function at a cell interface. This time evolution solution can be used not only for the flux evaluation across a cell interface and its time derivative, but also the time accurate evolution solution at a cell interface. As a result, the GKS can get both the cell averaged conservative flow variables and their slopes inside each control volume. Therefore the HWENO reconstruction can be naturally implemented for the compact high-order reconstruction. Numerical results show that the scheme is more accurate than the traditional non-compact high-order GKS and even as robust as the second-order one.

Date: Friday, 27 April 2018

Time: 2:00 p.m.- 3:00 p.m.

Venue: Room 4472 (near lift 25, 26)

All are welcome!