The Hong Kong University of Science and Technology

Department of Mathematics

<u>Lecture Series</u>
Scientific Computation

by

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Abstract

| Lecture 3:

Accelerated Piston Problem and High Order Moving Boundary Tracking Method for Compressible Fluid Flows | Reliable tracking of moving boundaries is important in the simulation of com-pressible fluid flows and there are a lot of contributions in literature. We recognize from the classical piston problem, a typical moving boundary problem, that the acceleration is a key element in the description the motion and it should be incorporated into the design of moving boundary tracking (MBT) methods. Technically, the resolution of the accelerated piston problem boils down to a one-sided generalized Riemann problem (GRP) solver, which is taken as the building block to construct schemes with high order accuracy both in space and time. In this paper we take this into account to propose a new family of high order accurate moving boundary tracking methods and verify the performance through one- and two-dimensional test problems. This is a joint work with Zhifang Du, from Institute of Applied Physics and Computational Mathematics, Beijing. |

Date: **Wednesday, 5 June 2019**
Time: **10:00am – 11:00am**
Venue: **Room 4504, Academic Building**
(near Lifts 25-26), HKUST

All are welcome!