Department of Mathematics
City University of Hong Kong

Colloquium

Organised by Prof. Tong YANG and Prof. Tao LUO

Structure preserving reduced order models

by

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Abstract :
Reduced basis methods have emerged as a powerful approach for the reduction of the intrinsic complexity of parametrized partial differential equations. However, standard formulations of reduced models do not generally guarantee preservation of symmetries, invariants, and conservation laws of the original system. This questions the validity of such models and has a number of unfortunate consequences, e.g., lack of stability of the reduced model.

In this talk we first provide a basic introduction to reduced order methods and then discuss recent developments of reduced methods that ensure the conservation of chosen invariants or key properties of the original problem. We shall pay particular attention to the development of reduced models for Hamiltonian problems and propose a greedy approach to build the basis. The performance of the approach is demonstrated for both ODEs and PDEs.

We subsequently discuss the extension of these techniques to ABC flows and, time permitting, point toward different directions and open questions within the development of reduced order models for time-dependent problems.

Date: 24 January 2017 (Tuesday)
Time: 4:30 – 5:30pm
Venue: G5-314 (AC1)
City University of Hong Kong

** All interested are welcome **
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