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The Hong Kong University of Science and Technology

Department of Mathematics

Seminar on Scientific Computation

Fast solvers for interface, irregular domain, and discontinuous coefficients problems using an augmented strategy

By

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Abstract

Augmented strategies are discussed to solve various interface problems with piecewise discontinuous coefficients and non-homogeneous jump conditions, and problems on irregular domains. An augmented method is similar to a boundary integral method in introducing one or several intermediate variables along a boundary or interface. But out approach does not need the Green functions and is independent of differential equations (linear or non-linear), source terms, boundary conditions, and domains. The augmented variable(s) should be chosen such that the original interface or/and boundary conditions are satisfied. There are several advantages of an augmented approach. One is that the utilize fast solvers; the second one is to decouple complicated problems to some simple ones; the third one is for accurate discretization. The augmented approach has been efficiently applied for a number of challenging problems including flow past obstacles; flows with discontinuous viscosity; and coupling between a fluid flows and porous media.

Date: ***Monday, 11 December 2017***

Time: ***3:30p.m.-5:30p.m.***

Venue: ***Room 1511, Academic Building (near Lifts 27 & 28), HKUST***

All are welcome!