THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF APPLIED MATHEMATICS
應 用 數 學 系

The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Some results on boundary integral equation methods and their applications in numerics

By

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Abstract

Firstly, we discuss two results on integral equation methods associated to the solution of scattering wave equations. One is the new regularization formulation of the hypersingular boundary integral operators resulting from several elastic wave equations, and another is the well-posedness result of the approximated reduced boundary value problems corresponding to the original scattering transmission problems. Secondly, we present two results on applying integral equation methods to solve Laplace equations. One is on the change of order of integral operators so that some preconditioner of domain discretization methods could be applied to improve the efficiency of surface discretization methods, and another is a new coupling technique, i.e. the Dirichlet-to-Dirichlet or the Dirichlet-to-Neumann mapping defined on two different artificial boundaries, which could preserve the accuracy of the coupling scheme even as the mesh size tends to zero. The application of these theoretical results in numerics will be presented.

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Date: 30 March 2022 (Wednesday)
Time: 10:00-11:00 (Hong Kong Standard Time GMT +8)
Venue: Online Talk via Zoom (Meeting ID: 973 3682 7327)
Speaker: Prof. Liwei Xu, University of Electronic Science and Technology of China
Host: Prof. Zhonghua Qiao, The Hong Kong Polytechnic University
Click to join:
https://polyu.zoom.us/j/97336827327?pwd=cWhEb3JoT0k1TmR5QmNhQkZwK2Rtdz09

*** * * ALL ARE WELCOME * * ***

For enrolment, please send your name and email to wai-yan.moon@polyu.edu.hk on or before 29 March 2022