Integral Equation Methods for Fourth Order PDEs

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Time : 3.30pm - 4.30pm
Venue : MAS Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

In this talk, we will discuss integral equation methods for solving certain boundary value problems of fourth order PDEs. In particular, we will present stable second kind integral equation (SKIE) formulations for the first Dirichlet problem of the biharmonic equation in three dimensions and the fluid problem of the modified biharmonic equation in two dimensions. A fast algorithm based on randomized matrix compressions has been constructed for the first problem and a high order discretization scheme has been developed for the second problem. Several numerical examples are provided to illustrate the performance of the overall algorithm.

Speaker Biography

Shidong Jiang is an Associate Professor in the Department of Mathematical Sciences at New Jersey Institute of Technology. He received a M.S. degree in Physics from New York University in 1998, and a Ph.D. degree in Mathematics from Courant Institute of New York University in 2001. From 2001-2004 he was a Postdoctoral Associate at Yale University. And He joined NJIT since 2004. His research interests include fast algorithms, integral equations methods, computational acoustics and electromagnetics, fluid dynamics, and scientific computing.

Host: Prof. Wang Li-Lian, Division of Mathematical Sciences, School of Physical and Mathematical Sciences