NCTS 2013 SUMMER COURSE ON SCIENTIFIC COMPUTING:

Summer 2013

Introduction to Boundary Integral Method and Artificial Boundary Method

Instructors:

Jeng-Tzong Chen (NTOU)
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Wenjun Ying (SJTU)
Der-Liang Young (NTU)

Dates:

7/26(F), 8/2(F), 8/9(F), 8/13(Tue), 8/20(Tue), 8/26 (M)
10:00-12:00，14:00-16:00

Many Scientific problems and Engineering applications involve solving PDE on unbounded regions. On the other hand, standard numerical methods for PDE, such as finite difference and finite element methods are mostly designed for bounded regions only. The bridging from unbounded regions to bounded ones is provided by the Artificial Boundary Method (ABM). Another traditional wisdom in dealing with the unbounded region and reducing the problem size is the Boundary Integral Method (BIM). This summer course is intended for both math and engineering majored graduate students and researchers interested in these topics. We will give a self contained exposition on

(1) Introduction to BIM.
(2) ABM for elliptic equations.
(3) ABM for heat equations.
(4) ABM for Schrodinger equations.
(5) Implicit ABM using BIM.
(6) High order discretization of BIM on 2D surfaces.
and some related topics.

Organizer:

Jeng-Tzong Chen (NTOU)
Wei-Cheng Wang (NTHU)

Venue:

R631(7/26) & Lecture Room A (8/2, 8/9, 8/13, 8/20, 8/26),
National Center for Theoretical Sciences,
4th Floor, The 3rd General Building,
National Tsing Hua University