

Title: Coupling interface method and its applications

Time: 12/12/2008 (Fri.) 2:30 PM~3:30 PM

Place: RM 111, New Physics Building

Speaker: Prof. I-Liang Chern (陳宜良)
Dept. of Math., NTU

Abstract:

I shall briefly review the coupling interface method [1] for solving elliptic complex interface problems in arbitrary dimensions, where the coefficients, the source terms, and the solutions may be discontinuous or singular across the interfaces. The main part of this talk will be on its applications, including (i) solving the electrostatic potential for macromolecules in ionic solvent, (ii) simulating the tumor growth using a continuum model, and (iii) solving guided wave modes in plasmonic crystals [2]. These applications demonstrate that CIM is capable to handle some moving interface problems and some elliptic eigenvalue problems with complex geometry.

References:

- [1] Chern, I-Liang and Yu-Chen Shu, J. Comp. Phys., 225 (2007) 2138.
- [2] Chang, Chien-Cheng, Yu-Chen Shu and I-Liang Chern, Phys. Rev. B 78, 035133 (2008).