

中央研究院數學研究所

Seminar on Integral Equations and the Application

主講人：Professor Jeng-Tzong Chen 陳正宗教授 (海洋大學)

講題：Water wave problems using integral equation: Ill-posedness and remedies

時間：2010年9月23日(星期四) 16:30~17:30

地點：中研院數學所 617 研討室(台大校區)
Seminar Room 617, Institute of Mathematics (NTU Campus)

茶會：演講前三十分鐘於 6 樓交誼區

Abstract:

Scattering of water waves by an array of circular and/or elliptical cylinders is solved by using the null-field boundary integral equations. Both the near-trapped modes (physics) and fictitious frequencies (mathematics) are observed. To deal with the ill-posed matrix of fictitious frequency for multiple cylinders, two remedies, Combined Helmholtz Interior integral Equation Formulation (CHIEF) approach and Burton and Miller formulation are considered. Regarding the Burton and Miller approach, hypersingular integrals can be easily calculated by using series summability owing to the introduction of degenerate kernel. The highly rank-deficient matrices for equal radius of cylinders are numerically examined and the rank is improved by adding valid CHIEF constraints. Besides, the selection of location and number for CHIEF points is studied instead of trial and error. Parameter study of incident angle on the resultant force is investigated. The effect of geometric scale for spacing and radius of cylinder on the near-trapped mode and fictitious frequency is also discussed. Several examples of water wave interaction by circular and/or elliptical cylinders were demonstrated to see the validity of the present formulation.

*** 歡迎參加

敬請張貼***

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