

行政院國家科學委員會專題研究計畫 期中進度報告

無網格邊界元素法在大型工程問題之運算研究(2/3)

計畫類別：個別型計畫

計畫編號：NSC92-2611-E-002-007-

執行期間：92年08月01日至93年07月31日

執行單位：國立臺灣大學水工試驗所

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NSC 92-2611-E-002-007 research project progress report

The three-year research program pursues the developments of numerical and analytic studies of meshless or meshfree or mesh reduction boundary element methods and its applications to the large scale engineering problems. This is the second year progress report for the three-year NSC research project. The project is going on very well, by the end of this month (31 May, 2004), we have finished the following achievements, a total of 11 papers published or submitted, without counting some other conference papers, papers in preparation, reports, or the research works of the MS and Ph.D. students.

In the following listings, only the most important and representative works are reported. For brief purposes, we will not include the in-going works mentioned above, such as some selected conference papers, the papers under preparation, the reports, and the research works of the MS and Ph. D. thesis or dissertation. In conclusion, the status of the research project is under control for this second year and is in a very good standing status for the full project, as far as the progress of the research project is concerned. We will include all the papers (include the following) in the final complete report at the third year.

1. Young, D.L., Chang, J.T., Eldho, T.I., 2004, Solution of three-dimensional unsteady external flow using a coupled arbitrary Lagrangian FEM-BEM model, **Engineering Analysis with Boundary Elements**. Vol.28,pp.711-723.(SCI)
2. Young, D.L., Jane, S.C., Lin, C.Y., Chiu, C.L., Chen, K.C., 2004, Solution of 2D and 3D Stokes law using multiquadrics method, **Engineering Analysis with Boundary Elements**. (In press)(SCI)(Invited paper)
3. Young, D.L., Tsai, C.C., Fan, C.M., 2004, Direct approach to solve nonhomogeneous diffusion problems using methods of fundamental solutions and dual reciprocity, **Journal of Chinese Institute of Engineers**. (In Press)(SCI)
4. Eldho, I.E., Young, D.L., 2004, Two-dimensional incompressible viscous flow simulation using velocity-vorticity dual reciprocity boundary element method, **Journal of Mechanics**. (In Press)(SCI)
5. Young, D.L., Ruan, J.W., 2004, Method of fundamental solutions for modelling electromagnetic wave scattering problems, **Computer Modeling in Engineering and Science**. (tentatively accepted, in revision)(SCI)(Invited paper)

6. Chen, C. W., Young, D. L., Fan, C. M., Murugesan, K., 2004, Solution of degenerate boundary problems in seepage flownets using the domain decomposition method for the method of fundamental solutions – **Communicated to International Journal for Numerical and Analytical Methods in Geomechanics.**
7. Fan, C. M., Young, D. L., Murugesan, K., 2004, Analysis of 2D and 3D Stokes flows by the method of fundamental solutions and Biot-Savart law- **Communicated to Computers and Mathematics with Applications.**
8. Chen, C. W., Fan, C. M., Young, D. L., Murugesan, K., 2004, Eigenanalysis of membranes with stringers using method of fundamental solutions and domain decomposition technique – **Communicated to Journal of Acoustics Society of America.**
9. Fan, C. M., Chen, C. W., Young, D. L., Murugesan, K., 2004, Method of fundamental solutions and Stokeslet to solve a boundary inverse Stokes problem –**Communicated to Computational Mechanics.**
10. Jane, S. C., Tsai, C. C., and Fan, C. M., Young, D. L., Murugesan, K., 2004, Analysis of 2D and 3D Stokes flows by the Stokeslet and method of fundamental solutions – **Journal of Computational Physics** (tentatively accepted, in revision).
11. Tsai, C. H., Chen, C. W., Fan, C. M., Young, D. L., Murugesan, K., 2004, Numerical solution of a Cauchy heat conduction problem in an anisotropic medium by the method of fundamental solutions – **Communicated to International Journal of Numerical Methods for Heat and Fluid flow.**