# 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(1/3)

計畫類別：個別型計畫
計畫編號：NSC91-2611-E-002-027-
執行期間：91 年 08 月 01 日至 92 年 07 月 31 日
執行單位：國立臺灣大學水工試驗所

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報告類型：精簡報告

處理方式：本計畫可公開查詢

中　華　民　國 92 年 5 月 26 日

Meshless Boundary Element Methods for the Analysis of Large Scale Engineering Problems (1/3)

NSC 91-2611-E-002-027 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 first 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, 2003), we have finished the following achievements, a total of 6 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 first 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.,Tsai,C.C.,Eldho,T.I.,Cheng,A.H.-D.,2002,Solution of Stokes flow using an iterative DRBEM based on compactly-supported, positive definite radial basis function, Computer Math. Applic. Vol.43, pp 607-619.(SCI)(invited paper)
2. Tsai,C.C.,Young,D.L.,Cheng,A,H.-D.,2002,Meshless BEM for three-dimensional Stokes flows, Journal of Computer Modelling in Engineering and Science, Vol.3, pp 117-128. (SCI) (invited paper)
3. Young,D.L.,Lin,C.Y.,Chiu,C.L.,Chen,K.C.,2002,Solution of Stokes flow using multiquadrics method,24$^{th}$ World Conference on Boundary Element Methods, Sinta, Portugal, June 17-19,2002.
4. Young,D.L.,Ruan,J.W., Method of fundamental solution for modelling electromagnetic wave scattering problems, Paper submitted to the International Workshop on MeshFree Methods, 21-23 July,2003,Lisbon,Portugal. (invited paper)
5. Young,D.L.,Jane,S.C.,Lin.C.Y.,Chiu,C.L.,Chen,K.C., Solutions of 2D and 3D Stokes flows using multiquadrics method, International Journal of Engineering

Analysis with Boundary Elements( in press) (SCI) (invited paper)

6. Chen,C.S.,Sarler,B.,Young,D.L., Fast solution of the method of fundamental solutions for the modified Helmholtz equation, paper submitted to the International Conference on Computational and Experimental Engineering and Sciences,24-29,2003,Corfu,Greece.(invited paper)