國立中山大學應用數學系

學術演講

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講　題：Particular Solutions for Solving Elliptic Partial Differential Equations Using Polynomial Basis Functions

時　間：2017/1/06（星期五）16:10 ~ 17:00

地　點：理學院四樓理 SC 4009-1 室

茶　會：15:30 於理 SC 4010 室 (系辦公室)

摘 要

In the past, polynomial particular solutions have been obtained for certain types of partial differential operators without convection terms. In this talk, a closed-form particular solution for more general partial differential operators with constant coefficients has been derived for polynomial basis functions. The newly derived particular solution is further coupled with the method of particular solutions (MPS) for numerically solving a large class of elliptic partial differential equations. In contrast to the use of Chebyshev polynomial basis functions, the proposed approach is more flexible in selecting the collocation points inside the domain. The polynomial basis functions are well-known for yielding ill-conditioned systems when their order becomes large. The multiple scale technique is applied to circumvent the difficulty of ill-conditioning problem.

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