

# 國立中山大學應用數學系

## 學術演講

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講題：Pseudospectral methods for the solution of  
the Poisson and Helmholtz equations

時間：2018/11/15（星期四）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 this talk, we present pseudospectral methods for solving the Poisson and Helmholtz equations. We first construct a set of polynomial basis functions that results in an easily solved linear system for the advective operator. Subsequently we present a numerical procedure in analogy of solving the Poisson equations by integrating twice. For the Helmholtz equations, we construct another set of polynomial basis functions that results in pentadiagonal linear systems. The principle of constructing those polynomial basis functions based on the recurrence and orthogonal relations among Legendre polynomials will be highlighted. Finally numerical experiments are presented to validate the proposed methods.

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