

# 國立中山大學應用數學系

## 學術演講

- 講者：Prof. Todd James Arbogast  
AMS fellow, Department of Mathematics, The University of Texas at Austin, USA
- 講題：Approximation of a Degenerate Elliptic Equation and applications to Mantle Dynamics (I), (II)
- 時間：2014/08/21 (星期四) 15:30 ~ 17:30
- 地點：理學院四樓理 SC 4009-1 室
- 茶會：15:00~15:30 於理 SC 4010 室 (系辦公室)

### 摘要

We consider approximation of second order, nonuniformly elliptic equation in divergence form. We treat the equation as a system of two first order equations in terms of pressure and velocity variables. We approximate the resulting system using a mixed finite element method. The equation has a degenerate coefficient, which leads us to novel choices for a scaled pressure and a variational form involving the coefficient. We obtain optimal approximation for the velocity. The mechanical system modeling flow in partially molten materials, as in mantle dynamics, has the character of the degenerate elliptic equation considered. We discuss application to this system.

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