

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of MATHEMATICS

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**“A Quadratic Inverse Eigenvalue Problem in
Model Updating”**

by

Prof. Delin Chu

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Date : **08/06/2010 (Tuesday)**
Time : **2:30PM – 3:30PM**
Venue : **N402**

Abstract

Updating a system modeled as a real symmetric quadratic eigenvalue problem to match observed spectral information has been an important task for practitioners in different disciplines. It is often desirable in the process to match only the newly measured data without tampering with the other unmeasured and often unknown eigenstructure inherent in the original model. Such an updating, known as no spill-over, has been critical yet challenging in practice. Only recently, a mathematical theory on updating with no spill-over has begun to be understood. However, other imperative issues such as maintaining positive definiteness in the coefficient matrices remain to be addressed. This talk highlights several theoretical aspects about updating that preserves both no spill-over and positive definiteness of the mass and the stiffness matrices. In particular, some necessary and sufficient conditions for the solvability conditions are established in this investigation.

Biography

- Name: Delin Chu
- Research Areas:
 - Scientific Computing, Numerical Analysis, Numerical Linear Algebra, control Theory
- Teaching Areas:
 - Numerical Analysis, Scientific Computation
- Academic / Professional Qualifications:
 - BSc – Ph.D, Tsinghua University, China
- Awards / Honors (Post-PhD):
 - National Science Research Award, The State Education Commission, China (1992)
 - Alexander von Humboldt Research fellowship, Germany (1996)
- Career History:
 - Assistant Professor / Associate Professor (1991-1995)
 - Research Fellow (1995-1998), Hong Kong, Germany and Belgium
 - Senior Fello / Assistant Professor / Associate Professor (Nov. 1998-), NUS
- Professional / Consulting Activities:
 - Referee:
 - SIAM J. Matrix Analysis Applications, SIAM J. Control and Optimization
 - Linear Algebra and Its Applications, IEEE Trans. Autom. Control, Automatica

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