THE UNIVERSITY OF HONG KONG

Department of Mathematics

Numerical Mathematics and Applied Analysis Group Seminar (NMAA)

A Quadratic Inverse Eigenvalue Problem in Model Updating

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in Room 210, Run Run Shaw Building, HKU

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.

All are welcome