



学术报告

题目: Bayesian model updating by sampling technique

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邀请人: 胡 琴



报告摘要: Model updating techniques has many different applications, which are not limited in the field of structural engineering. When a set of measured data is available for describing the behavior of a system, model updating can be used to identify a model to capture the input-output relationship of the target system. In the field of structural engineering, common applications are structural damage detection, vibration control, and reliability analysis. Even with the latest development in sensor technology, it is not possible to distribute high density of sensors throughout the entire structure, such as a building or a bridge. As a result, the number of degrees-of-freedom (DOFs) of the structural model (e.g., a finite element model) is much larger than the number of measured DOFs. When the problem of lack of measured DOFs integrated with the problems of measurement noise and modeling error, the results of model updating is uncertain in nature. Deterministic model updating method may not be able to provide reasonable results, and probabilistic methods are preferred in explicitly address the updated uncertainties associated with the model updating results. This seminar focus on the newly developed sampling-based Bayesian methods, including Markov chain Monte Carlo (MCMC) based methods, for handling unidentifiable model updating problems. The seminar also covers the importance of model class in system identification.

报告人简介: Ir Prof Paul Heung-fai LAM is currently **Chair Professor (Pengcheng Scholar)** in Harbin Institution of Technology (Shenzhen) and associate professor in City University of Hong Kong (CityU). His research interest is structural dynamics, vibration measurement, modal identification, structural model updating and damage detection, Bayesian system identification, design and analysis of vertical axis wind turbine. Prof Lam has over 80 international journal papers published with over 30 keynotes and invited lectures/presentations. Prof Lam is the **President** of the Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM), the **Chairman (Education and Training)** of the Hong Kong Construction Metal Structures Association (HKCMSA), the committee member of the Structural Division of Hong Kong Institute of Engineers (HKIE), the **General Secretary** of the International Steering Committee (ISC) of the East Asia-Pacific Conference on Structural Engineering and Construction (EASEC), and a committee member of ASCE Engineering Mechanics Institute (EMI). Prof Lam is the editorial board member for International Journal of Lifecycle Performance Engineering, and the review editor for Structural Sensing of Frontiers in Built Environment. Apart from research and professional leadership, Prof Lam dedicated tremendous effort in teaching and curriculum design. He is the Winner of Teaching Excellence Award (TEA) 2007/2008.