SEMINAR 886

题　目： **The Cell Mapping Methods:From Global Analysis of Nonlinear Dynamics to Multi-Objective ptimization Problems**

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时　间：4月9日（周二）下午 2:00

地　点：延长校区行健楼 1109

摘 要 The cell mapping methods were invited by C.S. Hsu of UC Berkeley in 1980s for global analysis of nonlinear dynamic systems. The methods have since evolved and been applied to various challenging problems including optimal controls of deterministic and stochastic nonlinear systems and multi-objective optimization problems. This talk presents a brief history of the cell mapping methods, and a summary of recent advances in algorithm studies for multi-objective optimization problems with the cell mapping methods. We present the latest algorithms of the cell mapping methods, and a hybrid of evolutionary algorithm and cell mapping for high dimensional multi-objective optimization problems. A number of interesting examples are included in the talk to demonstrate the broad applicability of the methods. The examples include well-known mathematical benchmark multi-objective optimization problems, multi-objective optimal design of linear and nonlinear controls, multi-objective optimization of structural-acoustic systems.

Dr. Jian-Qiao Sun earned a BS degree in Solid Mechanics from Huazhong University of Science and Technology in Wuhan, China in 1982, a MS and a PhD in Mechanical Engineering from University of California at Berkeley in 1984 and 1988.   He worked for Lord Corporation at their Corporate R&D Center in Cary, North Carolina.   In 1994, Dr. Sun joined the faculty in the department of Mechanical Engineering at the University of Delaware as an Assistant Professor, was promoted to Associate Professor in 1998 and to Professor in 2003. He joined University of California at Merced in 2007, and is currently a professor and chair of the department of Mechanical Engineering in School of Engineering.   He was elected to be a Qian-Ren-Ji-Hua scholar in the fourth cycle with Tianjin University.   Besides many other editorial experiences, he is the Editor-in-Chief of International Journal of Dynamics and Control published by Springer.

His research interests include stochastic non-linear dynamics and control, cell mapping methods, multi-objective optimization, high-density piezoelectric energy harvesting from highway traffic and data-driven energy management of office building HVAC systems.

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