

数学与系统科学研究院  
计算数学所学术报告

报告人: Prof. Yin-yu Ye (Stanford University, U.S.A.)

报告题目: A Unified Framework for Dynamic Pari-Mutuel Information Market Design: A Case of On-Line Optimization

报告时间: 6月27日 (星期六)  
上午 10:00-11:00

报告地点: 科技综合楼 301

邀请人: 袁亚湘 研究员

## 报告摘要：

Recently, several pari-mutuel mechanisms have been introduced to organize prediction markets, such as the logarithmic scoring rule, the cost function formulation, and sequential convex pari-mutuel mechanism (SCPM). In this work, we develop a unified framework that bridges these seemingly unrelated models for centrally organizing contingent-claim markets. Our framework establishes necessary and sufficient conditions for designing mechanisms with many desirable properties such as proper scoring, truthful bidding (in a myopic sense), efficient computation, controllable risk-measure, and guarantees on the worst-case loss. As a result, we develop the very first proper, truthful, risk-controlled, loss-bounded, and polynomial-time scoring rule, which neither of the previous proposed mechanisms possesses simultaneously. Thus, in addition to providing a general framework that unifies and explains all the existing mechanisms, our work would be an effective and instrumental tool in designing new market mechanisms. We also discuss applications of our framework to general open markets for dynamic resource pricing and allocation.

Joint work with Shipra Agrawal, Erick Delage, Mark Peters, Anthony So, and Zizhuo Wang.

**欢迎大家参加！**

## 叶荫宇教授简介

叶荫宇教授, 1988 年获斯坦福大学工程经济系统和运筹学博士学位, 现任斯坦福大学管理科学与工程系终身教授及工业联盟计划主任, 研究方向包括最优化、运筹学、算法设计与分析、传感器网络、**Computational Game/Market Equilibrium**、**Dynamic Resource Allocation**、**Stochastic and Robust Decision Making** 等。

叶荫宇教授 2009 年被聘为 **Chairman of MOSEK Technical Advisory Board**; 2007 年当选 **Vice Chair of the SIAM Activity Group on Optimization (SIAG/OP)**, 并获 **Stanford Asian American Faculty of Year Award**; 2006 年当选 **INFORMS (The Institute for Operations Research and Management Science) Fellow** 并成为 **Farkas** 奖首位获得者; 2004 年被 <http://www.ISIhighlycited.com> 评为 **highly cited mathematical researcher**; 2000 年被 MIT 评为 **Distinguished Speaker in High Performance Computation for Engineered Systems**; 2000 年和 2006 年两次受邀在数学规划大会发言; 两次获得 **BASES Innovators' E-Challenge** 一等奖。叶荫宇教授现在还担任运筹学、管理科学、优化与工程等领域多种杂志的主编或编委。