

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Qin Sheng**

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报告题目:

**An Exploration of Nonuniform  
Crank-Nicolson Schemes for  
Multiphysical Applications with  
Stochastic Inferences**

邀请人: 唐贻发 研究员

报告时间: **2017年5月5日 (周五)**

**上午 10:00-11:00**

报告地点: 数学院南楼九层

**902 教室**

## **Abstract:**

**This talk investigates a nonuniform and nonstandard Crank-Nicolson method for solving the degenerate Kawarada quenching-combustion equation with a vibrant stochastic source. Arbitrary grids are introduced in both space and time via adaptive principals to accommodate the uncertainty and singularities involved. It is found that, under proper constraints on mesh step sizes, the positivity, monotonicity of the solution, and numerical stability of the scheme developed are well preserved. We further extend the discussion to a more sophisticated multidimensional application. Questions and concerns will be proposed. Fun numerical experiments will be given to illustrate our exploration and conclusions.**

## **About Dr. Qin Sheng:**

Dr. Sheng received his BS and MS in Mathematics from Nanjing University in 1982, 1985, respectively. Then he acquired his Ph.D. from DAMTP, University of Cambridge under the supervision of Professor Arieh Iserles. After his postdoctoral research with Professor Frank T. Smith, FRS, in University College London, he joined National University of Singapore in 1990. Since then, Dr. Sheng was on faculty of several major universities till his joining Baylor University, which is one of known research institutions and the second biggest private university in the United States.

Dr. Sheng has been interested in splitting and adaptive numerical methods for solving linear and nonlinear partial differential equations. He is also known for the Sheng-Suzuki theorem in numerical analysis. He has published over 100 refereed articles as well as several joint research monographs. He has been an Editor-in-Chief of an SCI journal, International Journal of Computer Mathematics, published by Taylor and Francis since 2010. He gives invited presentations, including keynote lectures, in international conferences every year. Dr. Sheng's projects have been supported by several U.S. research agencies. He currently advises 3 doctoral students and 1 postdoctoral research fellow.

**欢迎大家参加！**