

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Weimin Han**

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报告题目:

**Hemivariational Inequalities: Theory  
and Numerical Analysis**

邀请人: 曹礼群 研究员

报告时间: 2016 年 7 月 19 日 (周二)

上午 10:00-11:00

报告地点: 数学院南楼七层

702 会议室

## **Abstract:**

Inequality problems in mechanics can be divided into two main classes: that of variational inequalities which is concerned with convex energy functionals (potentials), and that of hemivariational inequalities which is concerned with nonsmooth and nonconvex energy functionals (superpotentials). Through the formulation of hemivariational inequalities, problems involving nonmonotone, nonsmooth and multivalued constitutive laws, forces, and boundary conditions can be treated successfully. During the last three decades, hemivariational inequalities were shown to be very useful across a wide variety of subjects, ranging from nonsmooth mechanics, physics, engineering, to economics.

The talk includes an introduction of the basic notions, ideas and results of the theory of hemivariational inequalities, and focuses on numerical analysis of hemivariational inequalities. We present new results on convergence and error estimates for numerical solutions of hemivariational inequalities, with applications in solid mechanics as well as fluid mechanics. Optimal order error estimates are derived for finite element solutions using the linear elements. Numerical examples are shown on the performance of the numerical methods, including numerical convergence orders.

**欢迎大家参加！**