

数学与系统科学研究院

计算数学所学术报告

报告人: **Dr. Xinfeng Liu**

*(Department of Mathematics, University of South Carolina)*

报告题目:

**Computational studies for cell  
signaling and cancer stem cells**

邀请人: 冷伟 博士

报告时间: **2013 年 6 月 11 日 (周二)**

**下午 15:00**

报告地点: **科技综合楼三层 311**

**计算数学所报告厅**

## **Abstract:**

**Scaffold, a class of proteins, plays many important roles in signal transduction. Through studying various models of scaffold, I will show novel regulations induced by scaffold binding in a multi-site phosphorylation system and with scaffold's spatial localization. To efficiently compute the models, we introduce a new class of fast numerical algorithm incorporated with adaptive mesh refinement and WENO scheme for solving the stiff systems with spatial dynamics. Finally, I shall also introduce mathematical modeling for the dynamical interaction between cancer stem cells (CSCs) and non-stem cancer cells, and our findings reveal that two negative feedback loops are critical in controlling the balance between the population of CSCs and that of non-stem cancer cells. Furthermore, the model with negative feedback suggests that over-expression of the oncogene HER2 leads to an increase of CSCs by regulating the division mode or proliferation rate of CSCs.**

**欢迎大家参加!**