数学与系统科学研究院

计算数学所学术报告

报告人： **Prof. Karl–Heinz Hoffmann**

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报告题目： **Mathematical Models for Stem Cell Preservation and Differentiation**

邀请人： **陈志明研究员**

报告时间： **2010 年 3 月 18 日(周四)**

上午 10:00—11:00

报告地点： **科技综合楼三层 311**

计算数学所报告厅

Abstract:

Stem cell research is one of the most active and popular field in biomedicine. In spite of impressive success in the past years there are still many questions completely open. Mathematics can make contributions to solve at least partially some of the urgent problems. We will consider two particular aspects in this context: Preservation of stem cells Differentiation of stem cells Normally stem cells will be harvested at some time for later use. In the meantime they will be deeply frozen and defrosted when they are needed again. The process of freezing and defrosting must be carefully controlled in order to prevent the cells from becoming destroyed. From the mathematical point of view this leads to the treatment of a Stefan like problem for PDEs. We will analyse the problem and simulate the solution numerically. The stem cells which we have in mind are still pluripotent. When placing

them into a specified neighbourhood they become more diversified. We propose a mathematical model which is able to describe this process in part at least. Our model is based on physical–chemical principles of thermodynamics. The model will be analysed in theory and by numerical simulation.

欢迎大家参加！