

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Applications of Tensors in
Biomedical Engineering**

邀请人: **戴彧虹研究员**

报告时间: **2011 年 9 月 8 日 (周四)**

上午 8: 30-9: 30

报告地点: **科技综合楼三层 311**

计算数学所报告厅

Abstract:

In this talk, we first introduce some basic principles of magnetic resonance imaging (MRI). Then, we focus on a new MRI model, called Diffusion Kurtosis Imaging (DKI). Currently widely used Magnetic Resonance Imaging (MRI) model, Diffusion Tensor Imaging (DTI), is based on the assumption that the water molecule diffusion behavior in tissues obeys Gaussian distribution, while water molecule diffusion in biological tissues is usually in non-Gaussian, rather than Gaussian manner. DKI can characterize the non-Gaussian diffusion behavior, which involves a fourth order three dimensional tensor and a second order three dimensional tensor. Similar to those in DTI, the extreme diffusion values and extreme directions associated to this tensor pair play important roles in DKI. We study the properties of the extreme values and directions associated to such tensor pairs. We also present a numerical method and its preliminary computational results.

欢迎大家参加!