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： **Dynamic Lung Modeling and Tumor Tracking Using Deformable Image Registration and Geometric Modeling**

邀请人： 徐国良研究员

报告时间：**2010 年 12 月 15 日（周三）上午 10：00**

报告地点： 科技综合楼三层 **311** 计算数学所报告厅

Abstract：

Effective cancer treatment requires complete destruction of cancerous cells while preserving the functionality of normal organs.   In contrast to conventional surgical procedures, radiation surgery is minimally invasive and simple to perform, potentially decreasing complications and minimizing hospitalization.   The main goal of this research project is to perform pre-clinical modeling and tumor tracking analysis of radiation therapy for lung cancer treatment planning.   The investigation will concentrate on the development of a novel comprehensive computational framework including high-fidelity geometric modeling, deformable image registration, dynamic modeling, and motion tracking. The characterization of internal organ motion due to respiration is important for many advanced therapeutic technologies for lung cancers, including proton radiotherapy because proton treatments are sensitive to tissue density variations.   There is a need to understand the behaviors of organ motion and develop tools to simulate the dynamic process. Four-dimensional CT imaging will be acquired to represent patient's anatomy in different breathing phases. This is an interdisciplinary project that will combine clinical data and computational modeling to address a vital need in predictive medicine.   The result of the study will predict the uncertainties in proton dose delivery when respiratory motion is involved.

欢迎大家参加！