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：

Statistical Regularization of Electron Tomography Reconstruction

邀请人：　徐国良研究员

报告时间：　**2010** 年 **7** 月 **8** 日（周四）下午 **2：00**

报告地点：　科技综合楼三层 **311** 计算数学所报告厅

Abstract:

Electron Microscopy is an important tool for structural biologists to capture and visualize 3D structures of bio-molecular complexes at sub-nanometer resolution. Tomography involves solving an inverse problem to generate a volumetric map from multiple tilt series projection images. Due to the limitations in the acquisition process only a limited number of projections images can be acquired. Also, noise and other acquisition issues make the inverse problem severely ill posed. This talk will introduce the basic concepts of tomography and current popular methods for solving the inverse problem. This talk will discuss a new method for performing tomographic reconstruction for electron tomography using a statistical framework. In this method a likelihood model will be chosen based on the imaging physics and a prior model will include prior information about the volumetric map being reconstructed. The solution is obtained by solving for a maximum-a-posteriori estimate using an optimization scheme. We plan to use tilt series projection images of the AIDS virus interacting with a neutralizing drug. Spatially realistic models of the virus derived from X-ray crystallography data will be used as a prior in the statistical regularization method. We will also use 2D and 3D phantom structures to demonstrate this method.

欢迎大家参加！