

数学与系统科学研究院

计算数学所学术报告

报告人: **Prof. Chao Yang**

( *Lawrence Berkeley Laboratory, U.S.A* )

报告题目:

**Alignment and Reconstruction  
Optimization for Soft X-ray Cell  
Tomography**

邀请人: 刘歆 博士

报告时间: **2013 年 9 月 9 日 (周一)**

**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:**

Soft X-ray tomography (SXT) is a powerful imaging technique that generates quantitative, 3D images of the structural organization of whole cells in a near-native state. The success of such an approach depends on whether one can merge 2D X-ray measurements in 3D in an optimal fashion. The challenges to this tomographic reconstruction task include the lack of precise geometric information associated with the cell sample and the rotation stage on which the sample is placed, stage vibration, number of measurements, and noise contamination in the image. To meet these challenges, we formulate the problem as a nonlinear optimization problem and solve it iteratively. The decision variables include both the 3D absorb coefficients of the cell and the orientation parameters associated with each image. Currently, we use an alternating direction method to solve the problem. I will describe this method in detail and discuss how this method can be further improved.

欢迎大家参加!