

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:

**Structure Elucidation from 3D
Electron Microscopy**

邀请人: **徐国良研究员**

报告时间: **2007年5月28日(周一)**

下午 4:00–5:00

报告地点: **科技综合楼三层 311**

计算数学所报告厅

Abstract:

With continued advances in three dimensional Electron Microscopy (3D EM) one is progressively able to elucidate the structural building blocks of proteins (and nucleic acids) at varying resolutions. In this talk, I shall discuss algorithms to detect the secondary structural motifs (helices and sheets) from proteins for which the volumetric 3D EM maps are reconstructed at 5-10 Angstrom resolution. Additionally, I shall show that when the resolution is coarser than 10 Angstrom, some of the tertiary structural molecular motifs can be elucidated from the 3D EM. For each of these algorithms, we employ techniques from computational geometry (Delaunay Triangulations/Voronoi Diagrams) and differential topology (Morse-smale complexes), especially the computation of stable/unstable manifolds of certain critical points of distance functions of surface boundaries. I shall also allude to the use of such techniques for deformations of 2D or 3D images, for computer graphics applications.

欢迎大家参加！