



IPAM/CCB Summer School: MATHEMATICS IN BRAIN IMAGING

July 14 – 25, 2008

ORGANIZING COMMITTEE: Paul Thompson (UCLA School of Medicine), Michael Miller (Johns Hopkins University), Russ Poldrack (UCLA Dept. Psychology), Tom Nichols (Oxford University/GlaxoSmithKline), Keith Worsley (McGill University), Jonathan Taylor (Stanford)

Introduction

This two-week intensive workshop will focus on mathematical techniques applied to brain images to measure, map and model brain structure and function. Topics will range from modeling anatomical structures in MRI scans, and mapping connectivity in diffusion tensor images, to statistical analysis of functional brain images from fMRI, EEG, and MEG. Current applications in radiology and neuroscience will be highlighted, as will new directions in the mathematics of structural and functional image analysis. In the second week on Functional Brain Mapping, a series of lectures on diffusion tensor imaging will discuss mathematics and tools for registration, segmentation, fiber tracking and connectivity modeling in tensor and “beyond-tensor” (high-angular resolution) diffusion images, using metrics on Riemannian manifolds. Software implementing a wide range of algorithms will be demonstrated; tutorial notes will be provided. Talks will interest newcomers as well as experts in the field. Morning lectures on the principles behind the methods; afternoon lectures will go in-depth into applications.

Program Schedule

- Week 1: Computational Anatomy, July 14 – 18, 2008
- Week 2: Functional Brain Mapping, July 21 – 25, 2008

Participation

Additional information about this program including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

www.ipam.ucla.edu/programs/mbi2008



UCLA

IPAM is an NSF funded institute

