

Department of Applied Mathematics and Statistics
The Johns Hopkins University

STUDENT SEMINAR

Hsiao-Fang Chou
Dept. of Applied Mathematics & Statistics
The Johns Hopkins University

Tuesday, November 14, 2006
304 Whitehead Hall
4:00 p.m.

SMOOTHING VECTOR FIELDS AND TENSORS USING DUAL NORMS

ABSTRACT

Diffusion tensor imaging (DTI) has become a popular in vivo diagnostic imaging technique in radiological sciences nowadays. In order for this imaging technique to be more effective, proper image-processing methods suited for analyzing these high-dimensional data need to be developed. In this talk, we present a novel smoothing technique for reducing noise in diffusion tensor images. The formulation is derived from the associated dual norm of a reproducing kernel Hilbert space of vector fields or tensors. Under the constraint that all vector fields have unit norm, we propose an optimization scheme for maximizing the dual norm and prove that a smooth solution will in fact exist.