

Department of Applied Mathematics and Statistics
The Johns Hopkins University

SEMINAR

James Damon
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at Chapel Hill

September 28, 2006
304 Whitehead Hall
Refreshments: 3:30 p.m.
Seminar: 4:00 p.m.

**MEDIAL REPRESENTATION AS A TOOL FOR UNDERSTANDING
SHAPE OF 2D AND 3D OBJECTS**

ABSTRACT

For objects in medical images or biological objects, there is a basic goal of both comparing and analyzing their shapes. In the case of medical images, a further goal is to provide tools which will allow a statistical analysis of a population of similar objects, such as (for example) specific organs from a cross section of patients. We describe an approach using medial representations for both analysis and (statistical) comparison of shapes of objects. This approach makes use of recent mathematical methods for deriving local, relative, and global geometric properties of objects in terms of “medial-type geometry” defined on medial-like structures. These results have implications for the form that the statistical analysis should take. We describe a number of these results.