Analysis and Differential Geometry Seminar

Degeneration and the Determinant of the Laplacian

David Sher
Stanford University

Abstract: When doing analysis on singular spaces, it is often useful to approximate them by smooth manifolds. In this spirit, we consider a family of smooth manifolds which degenerate to a manifold with a conical singularity, and analyze the behavior of various spectral-theoretic quantities under this degeneration. In particular, when we consider the behavior of the eigenvalues of the Laplacian and of the heat kernel, interesting structure becomes apparent. In this talk, I'll discuss this structure, and then discuss how it can be used to give an asymptotic expansion for the determinant of the Laplacian under conic degeneration. I'll also discuss applications and directions for further research.

Tuesday, January 24, 2012, 4:00 pm
Mathematics and Science Center: W301

Mathematics and Computer Science
Emory University