1027-58-61   **J M Rowlett*** (`rowlett@math.ucsb.edu`), 6607 South Hall, University of California, SantaBarbara, CA 93106. *Spectral Geometry and Asymptotically Conic Convergence.*

We define asymptotically conic (AC) convergence in which a family $\{g_\epsilon\}$ of smooth Riemannian metrics on a fixed compact manifold M degenerate to a singular metric g_0 on a compact manifold with boundary M_0, where g_0 has an isolated conic singularity at the boundary. This convergence is related to the analytic surgery metric degeneration of Mazzeo-Melrose and is the model problem for ongoing work of Degeratu-Mazzeo on QALE/QAC spaces. We discuss the general setup for AC convergence and present two spectral convergence results.

1. Convergence of the spectrum of geometric Laplacians for g_ϵ to the spectrum of the Friedrich's extension of geometric Laplacian for g_0.

2. Asymptotic expansion in ϵ of the corresponding heat kernels as $\epsilon \to 0$, with uniform convergence in t.

We summarize the techniques of the proofs which include rescaling arguments, parametrix construction on manifolds with corners, maximum principle, and a new resolution blowup and parameter (ϵ) dependent heat operator calculus developed in this work. (Received February 12, 2007)