Meeting: 1005, Newark, Delaware, SS 12A, Special Session on Geometric Analysis

1005-58-9 **Martin Ngu Ndumu*** (`mndumu@umes.edu`), Department of Math and Computer Science, University of Maryland Eastern Shore, Princess Anne, MD 21853. *Heat Trace Asymptotics for Generalized Heat Kernels.*

Here p$_t^{M\&\#8320;}$(x,P) is a generalized heat kernel relative to an operator (1/2)+b on a Riemannian manifold M. P is a submanifold of M, M₀ is a tubular neighborhood of P and b is a vector field on M. When is the Laplace-Beltrami operator the expansion coefficients b(x,P) are geometric invariants generalizing the usual heat kernel coefficients: b₀=1. b₁(y₀,P) =(1/(12))3∑ <H,i>+ ^{M}-3^P +∑$_{;aa}^M$+∑R$_{abab}^M$(y₀) -(1/2)& #8214;b& #8214; ^{2}+(1/2)divb(y₀) The expression for b₂(y₀,P) contains more geometric information and is too long to be included here. When is the Hodge-de Rham Laplacian the coefficients b(x,P),s are local geometric invariants which generalizes the heat trace coefficients: b₀(y₀,P) =1 b₁(y₀,P)=(1/(12))3∑ <H,>+ ^{M}-3^P+∑$_{;aa}^M$+∑ R$_{abab}^M$(y₀)I$_V$ -(1/2)‖b‖ ^{2}+(1/2)divb(y₀)I$_V$+(1/2)$_{;ii}$ +(1/4)($_{ijij}^{ll}$)+∇(b)(y₀)I$_V$ where $_{ij}$ are the curvature 2-forms on the vector bundle ∧T*M. The expression for b₂(y₀,P) contains more geometric information. (Received December 02, 2004)