Inaudible curvature properties of closed Riemannian manifolds

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Abstract

Following Mark Kac, it is said that a geometric property of a compact Riemannian manifold can be heard if it can be determined from the eigenvalue spectrum of the associated Laplace operator on functions. On the other hand, D'Atri spaces, manifolds of type A, probabilistic commutative spaces, C-spaces, TC-spaces, and GC-spaces have been studied by many authors as symmetric-like Riemannian manifolds. We show that for closed Riemannian manifolds, none of the properties just mentioned can be heard. Moreover, we show that weak local symmetry is another inaudible property of Riemannian manifolds.

This talk should be accessible to graduate students.