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Inégalités isopérimétriques, courbure de Ricci et invariants géométriques. I. (French)

Zbl 0535.53034

C. R. Acad. Sci., Paris, Sér. I 296, 333-336 (1983).

Summary: We give a sharp estimate for some isoperimetric constants on Riemannian manifolds. As consequences, we obtain: a lower bound (as universal as possible) of the first eigenvalue of the Laplace-Beltrami operator for the Dirichlet problem on a domain of a Riemannian manifold, an improvement of Cheeger's inequality $\lambda_1 > h^2/4$, an explicit and sharp calculus of the constants involved in the inequalities linked to Sobolev's inclusions. This last result will enable us to estimate several topological and Riemannian invariants (see the paper reviewed below).

MSC:

53C20 Global Riemannian geometry, including pinching

58J50 Spectral problems; spectral geometry; scattering theory on manifolds

Cited in 4 Reviews

Cited in 13 Documents

Keywords:

isoperimetric constants; lower bound; first eigenvalue; Laplace-Beltrami operator; Dirichlet problem; Cheeger's inequality; Sobolev's inclusions