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Conformal invariants associated to a measure. (English) Zbl 1160.53356

Summary: In this note, we study some conformal invariants of a Riemannian manifold \((M^n, g)\) equipped with a smooth measure \(m\). In particular, we show that there is a natural definition of the Ricci and scalar curvatures associated to such a space, both of which are conformally invariant. We also adapt the methods of C. L. Fefferman and C. R. Graham [Astérisque, No. Hors Sér. 1985, 95–116 (1985; Zbl 0602.53007)] and C. R. Graham, R. Jenne, L. J. Mason and G. A. J. Sparling, J. Lond. Math. Soc., II. Ser. 46, No. 3, 557–565 (1992; Zbl 0726.53010)] to construct families of conformally covariant operators defined on these spaces. Certain variational problems in this setting are considered, including a generalization of the Einstein–Hilbert action.

MSC:
53C21 Methods of global Riemannian geometry, including PDE methods; curvature restrictions
53C20 Global Riemannian geometry, including pinching

Keywords:
Riemannian measure space

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References:

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