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Curvature h -principles. (English) Zbl 0909.58005
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This paper derives some properties of the spaces of all metrics on a differentiable manifold M which satisfy curvature bounds. In particular, the spaces $\text{Ric}^{<\alpha}(M)$ and $S^{<\alpha}(M)$ of metrics on M with, respectively, Ricci curvature less than α and scalar curvature less than α for $\alpha \in \mathbb{R}$ are investigated. Theorem A says that these spaces are contractible, while Theorem B is an approximation result that these spaces are dense in the space of all metrics in the C^0 and the Hausdorff topologies. Thus, any metric is C^0 close to a metric of arbitrarily negative Ricci curvature. Theorems C and D are local versions of these results.

Reviewer: [P.Michor \(Wien\)](#)

MSC:

[58D17](#) Manifolds of metrics (especially Riemannian)

[53C21](#) Methods of global Riemannian geometry, including PDE methods; curvature restrictions

Cited in **8** Documents

Keywords:

[space of metrics](#); [differentiable manifold](#); [curvature bounds](#)

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