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Title: Diffeomorphic theorems for open Riemannian manifolds with curvature decay

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In this paper, we study the topology of complete non-compact Riemannian manifolds with curvature decay to a non-positive constant. We show that such a complete open manifold M is diffeomorphic to a Euclidean n -space $\mathbb{R}^n$ if it contains enough rays starting from the base point. As applications, we also show that this kind of manifolds with Ricci curvature bounded from below by a non-positive constant are diffeomorphic to $\mathbb{R}^n$ if the volumes of geodesic balls in M grow properly. Our results generalize the main theorems of Wang–Xia for manifolds with quadratic curvature decay to zero.

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