

Volume estimates without curvature conditions

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Abstract:

We derive a precise estimate on the volume growth of the level set of a potential function on a complete noncompact Riemannian manifold. As applications, we obtain the volume growth rate of a complete noncompact self-shrinker and a gradient shrinking Ricci soliton. We also prove the equivalence of weighted volume finiteness, polynomial volume growth and properness of an immersed self-shrinker in Euclidean space. This is a joint work with X. Cheng.