

Volume growth estimates for Ricci solitons and quasi-Einstein manifolds

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Abstract

In this talk, we will present some volume growth estimates for complete noncompact gradient Ricci solitons and quasi-Einstein manifolds similar to the classical results by Bishop, Calabi and Yau for complete Riemannian manifolds with nonnegative Ricci curvature. We will present a sharp volume growth estimate for complete noncompact gradient shrinking Ricci soliton. Moreover, we provide upper bound volume growth estimates for complete noncompact quasi-Einstein manifolds with ≤ 0 . In addition, we will show that geodesic balls of complete noncompact quasi-Einstein manifolds with ≤ 0 and ≤ 0 have at most exponential volume growth. This is a joint work with Detang Zhou and Xu Cheng.

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