

Volume Comparison of Q -curvature

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Abstract

Classical volume comparison for Ricci curvature is a fundamental result in Riemannian geometry. In general, scalar curvature as the trace of Ricci curvature, is too weak to control the volume. However, with the additional stability assumption on the closed Einstein manifold, one can obtain a volume comparison for scalar curvature. In this talk, we investigate a similar phenomenon for Q -curvature, a fourth-order analogue of scalar curvature. In particular, we prove a volume comparison result of Q -curvature for metrics near stable Einstein metrics by variational techniques and a Morse lemma for infinite dimensional manifolds. Moreover, with some appropriate assumptions, one can extend this result to the so called J -Einstein metrics, where J -tensor is a canonical symmetric $(0, 2)$ -tensor associated to Q -curvature. This is a joint work with Wei Yuan.