Scalar Curvature

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1 Introduction

It is known that scalar curvature controls the volume of geodesic ball.

2 Formula

Theorem 1. *The asymptotic expression of volume of geodesic ball is:*

$$\mathrm{Vol}(B_r(p)) = \omega_n r^n \left(1 - \frac{\mathrm{Scal}(p)}{6(n+2)} r^2 + O(r^3)\right) \quad (r \to 0).$$

Proof. See Gallot, et. al., *Riemannian Geometry.* □