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Extremal functions for the Moser-Trudinger inequalities on compact Riemannian manifolds.

(English) [Zbl 1100.53036](#)

Sci. China, Ser. A 48, No. 5, 618-648 (2005).

The main results of the paper are the following theorems: Theorem I. If (M, g) is a compact Riemannian manifold without boundary, then

$$\sup \left\{ \int_M e^{a_n |u|^{\frac{n}{n-1}}} dV_g : u \in H^{1,n}(M), \int_M u dV_g = 0, \int_M |\nabla u|^n dV_g = 1 \right\}$$

and

$$\sup \left\{ \int_M e^{a_n |u|^{\frac{n}{n-1}}} dV_g : u \in H^{1,n}(M), \int_M |\nabla u|^n + |u|^n dV_g = 1 \right\}$$

are attained. Theorem II. If (N, g_N) is a compact Riemannian manifold with boundary, then

$$\sup \left\{ \int_N e^{a_n |u|^{\frac{n}{n-1}}} dV_{g_N} : u \in H^{1,n}(N), u|_{\partial N} = 0, \int |\nabla u|^n dV_{g_N} = 1 \right\}$$

is attained.

Reviewer: [Mihail Banaru \(Smolensk\)](#)

MSC:

53C21 Methods of global Riemannian geometry, including PDE methods; curvature restrictions

26D15 Inequalities for sums, series and integrals

Cited in **1** Review
Cited in **70** Documents

Keywords:

[compact manifold](#)

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