Jungang Li* (f16532@wayne.edu), Wayne State University, Detroit, MI 48201, and Guozhen Lu. Sharp Moser-Trudinger Inequality on Complete Noncompact Riemannian Manifolds.

We will consider the sharp Moser-Trudinger inequality on complete noncompact Riemannian manifolds. Namely,

$$\sup_{u \in W^{1,n}(M), ||u||_{1,\tau} \leq 1} \int_M \phi(\alpha_n |u|^\frac{n}{n-1}) dV_g \leq C(n, \tau)$$

(1)

Where $\phi(t) = \sum_{k=n-1}^{\infty} \frac{t^k}{k!}$, $\alpha_n = n\omega_{n-1}^{\frac{1}{n-1}}$, where $\omega_{n-1}$ is the area of the unit sphere in $\mathbb{R}^n$, $||u||_{1,\tau} = (\int_M \tau |u|^n + |\nabla u|^n)^\frac{1}{n}$. The inequality is sharp in the sense that for $\alpha > \alpha_n$, the above inequality fails. (Received January 18, 2015)