

Title: Gradient estimates for a weighted nonlinear equation on complete noncompact manifolds

Author(s): Jing Li, Guoqing He and Peibiao Zhao

MA, HUANG and LUO [12] considered $\Delta u + cu^\alpha = 0 (\alpha < 0)$ with $\text{Ric}_{ij} \geq -Kg_{ij}$, and obtained some gradient estimates. In the present paper, we investigate the weighted nonlinear equation $\Delta_f u + cu^{-\alpha} = 0$ with $\text{Ric}_f^N \geq -K$, where f is a smooth real-valued function on a complete noncompact Riemannian manifold (M^n, g) , $\alpha > 0$ and c are two real constants, and we achieve some gradient estimates for positive solutions of this weighted nonlinear equation. The results posed in this paper can be regarded as a natural generalization of the results in [12].

Address:

Jing Li
Department of Applied Mathematics
Nanjing University of
Science and Technology
Nanjing, Jiangsu, 210094
P. R. China

Address:

Guoqing He
Department of Mathematics
and Applied Mathematics
Anhui Normal University
Wuhu, Anhui, 241000
P. R. China

Address:

Peibiao Zhao
Department of Applied Mathematics
Nanjing University of
Science and Technology
Nanjing, Jiangsu, 210094
P. R. China