

A class of fully nonlinear equations arising from conformal geometry¹

Weimin Sheng

Department of Mathematics, Zhejiang University, Hangzhou 310028, China
E-mail: weimins@zju.edu.cn

Yan Zhang

Department of Physics, Zhejiang University, Hangzhou 310027, China
E-mail: yzhang@zimp.zju.edu.cn

Abstract

In this paper we study the long time existences for a class of fully nonlinear parabolic equations arising from conformal geometry. Especially we prove that every smooth compact n dimensional manifold, $n \geq 3$, admits a Riemannian metric g with its Ricci curvature Ric and scalar curvature R satisfying

$$\det(\text{Ric} - R \cdot g) = \text{const..}$$

¹The work supported by NNSFC (no. 10471122) and the Zhejiang Provincial Natural Science Foundation of China (no.102033). The work was partially done while the first author was visiting the Institute for Mathematical Sciences, National University of Singapore in 2004. The visit was supported by the Institute.