

CONFORMAL METRICS IN \mathbb{R}^{2m} WITH CONSTANT Q -CURVATURE AND ARBITRARY VOLUME

XIA HUANG AND DONG YE

ABSTRACT. We study the polyharmonic problem $\Delta^m u = \pm e^u$ in \mathbb{R}^{2m} , with $m \geq 2$. In particular, we prove that for any $V > 0$, there exist radial solutions of $\Delta^m u = -e^u$ such that

$$\int_{\mathbb{R}^{2m}} e^u dx = V.$$

It implies that for arbitrary given volume V , there exist conformal metrics g on \mathbb{R}^{2m} with constant Q -curvature $Q_g = (-1)^{m+1}$ and $\text{vol}(g) = V$. This answers some open questions in Martinazzi's work.

DEPARTMENT OF MATHEMATICS AND CENTER FOR PARTIAL DIFFERENTIAL EQUATIONS, EAST CHINA NORMAL UNIVERSITY, SHANGHAI 200062, P.R. CHINA
E-mail address: xhuang1209@gmail.com

IECL, UMR 7502, DÉPARTEMENT DE MATHÉMATIQUES, UNIVERSITÉ DE LORRAINE, BÂT. A, ÎLE DE SAULCY, 57045 METZ, FRANCE
E-mail address: dong.ye@univ-lorraine.fr