Invent math (2012) 187:507–509
DOI 10.1007/s00222-011-0356-1

ERRATUM

Erratum to: The scalar curvature flow on S^n—perturbation theorem revisited

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Published online: 27 September 2011

Erratum to: Invent Math DOI 10.1007/s00222-011-0335-6

In this erratum, our main purpose is to correct some careless mistake in our paper. The error occurs in the proof of Lemma 4.2. This error effects the size β of initial energy level through the selection of ϵ_0. However our main statement, Theorem 1.2, will stand as it is.

The details are as follows.

(1) Before the statement of Lemma 4.2: the third sentence in the paragraph before the equation (4.2), "Hence we set … and set …" should be changed to "Since $\frac{\max_{S^n} f}{\min_{S^n} f} < \delta_n \leq 2^{\frac{2}{n-2}}$ for all $n \geq 3$, choose $\epsilon_f =$

The online version of the original article can be found under doi:10.1007/s00222-011-0335-6.

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$\frac{1}{2}[\delta_n(\frac{\min_{S^n} f}{\max_{S^n} f}) - 1] > 0$. Hence set $\epsilon_0 = \min\{\frac{1}{2}[2^{(\frac{n-2}{n})^2} - 1], \epsilon_f\} > 0$ if $n \leq 3 \leq 4$ and $\epsilon_0 = \min\{\frac{1}{2}(2^{\frac{n-4}{n}} - 1), \epsilon_f\} > 0$ for $n \geq 5$ and set

$$\beta = n(n-1)(1+\epsilon_0)^{\frac{n-2}{n}} \left(\min_{S^n} f\right)^{-\frac{n-2}{n}}. \quad (4.2)\text{''}$$

(2) In the proof of Lemma 4.2, for the first long equation, it should read as

$$\begin{aligned} L(n(n-1)-\epsilon) &\leq \sum_{j=1}^{L} \left[\omega_n^{-1} \int_{B_r(P_j)} |R(g(t_k))|^{n/2} d\mu_{g(t_k)}\right]^{2/n} \\ &\leq L^{1-\frac{2}{n}} \left[\fint_{S^n} |R(g(t_k))|^{n/2} d\mu_{g(t_k)}\right]^{2/n} \\ &\leq L^{1-\frac{2}{n}} \left[\fint_{S^n} |R(g(t_k)) - \alpha(t_k) f|^{n/2} d\mu_{g(t_k)}\right]^{2/n} \\ &\quad + L^{1-\frac{2}{n}} \alpha(t_k) \left[\fint_{S^n} |f|^{n/2} d\mu_{g(t_k)}\right]^{2/n}. \end{aligned}$$

(3) In the proof of Lemma 4.2, for the second long equation, it should display as follows:

$$\begin{aligned} &\alpha(t_k) \left[\fint_{S^n} |f|^{n/2} d\mu_{g(t_k)}\right]^{2/n} \\ &\quad \leq E_f[u_k] \left[\fint_{S^n} |f|^{n/2} d\mu_{g(t_k)}\right]^{2/n} \left[\fint_{S^n} f d\mu_{g(t_k)}\right]^{-2/n} \\ &\quad \leq E_f[u_0] \left[\max_{S^n} f\right]^{\frac{n-2}{n}} \\ &\quad \leq \beta \left[\max_{S^n} f\right]^{\frac{n-2}{n}} \\ &\quad \leq n(n-1) \left[(1+\epsilon_0) \frac{\max_{S^n} f}{\min_{S^n} f}\right]^{\frac{n-2}{n}} \\ &\quad \leq n(n-1) \left[(1+\epsilon_f) \frac{\max_{S^n} f}{\min_{S^n} f}\right]^{\frac{n-2}{n}}. \end{aligned}$$

(4) After the mentioned second long equation: the sentences should be changed as follows: "Let $k \to \infty$, one has $Ln(n-1) \leq L^{1-\frac{2}{n}} n(n-1)[(1+\epsilon_f)\frac{\max_{S^n} f}{\min_{S^n} f}]^{\frac{n-2}{n}}$. With our choices of ϵ_f, we get $L^{\frac{2}{n}} \leq$

$[(1+\epsilon_f)\frac{\max_{S^n} f}{\min_{S^n} f}]^{\frac{n-2}{n}} < 2^{\frac{2}{n}}$. One easily concludes that $L = 1$ since L is a natural number."

We also would like to take this opportunity to correct other typo: namely, in the proof of Lemma 3.1, in case (i), after the long equation, the phrase "by observing that $\frac{\alpha(t)}{E[u]} = \fint_{S^3} f u^6 d\mu_{S^3} \le M \fint_{S^3} u_0^6 d\mu_{S^3}$ and ..." should be replaced by "by observing that $\frac{\alpha(t)}{E[u]} = (\fint_{S^3} f u^6 d\mu_{S^3})^{-1} \le m^{-1}(\fint_{S^3} u_0^6 d\mu_{S^3})^{-1}$ and ...".

Acknowledgements The incorrectness of the proof of Lemma 4.2 was brought to our attention by Dr. Pak Tung Ho. Anonymous referee made the crucial observation in this corrigendum. We both would like to sincerely thank Dr. Pak for his interest in our work as well as bringing this point to our attention and the referee for his important contribution to this work.