Correction to "On the characterization of flat metrics by the spectrum"

Autor(en): **Kuwabara, Ruishi**

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RUISHI KUWABARA

In order to derive Proposition 5.3 on page 437, we must give a more precise definition of the weak C^∞ Riemannian structure on the normed space X.

Consider a map $x(\in X) \mapsto \beta(x)$ (the weak inner product of X) such that the topology of $X_{\beta(x)}$ does not depend on x. Set $\beta = \beta(0)$. If $x \mapsto \beta(x)$ is a C^∞ map of X into $L(X_\beta, X_\beta; \boldsymbol{R})$, we call this map a *weak* C^∞ *Riemannian structure* on X.

Under this definition, subsequent discussions are valid by changing Lemma 6.2 on page 438 as follows.

LEMMA 6.2. *Let* $L_g = (1+\bar{\Delta}_g)^2$, *and* $s > (n/2)+3$, $s \geqq k$. *Then the maps*

$$\mathfrak{R}^s \times S_2^k \to S_2^{k-4}; \qquad (g, h) \mapsto L_g h$$

and

$$\mathfrak{R}^s \times S_2^{k-4} \to S_2^k; \qquad (g, h) \mapsto L_g^{-1} h$$

are of C^∞ *class.*

Proof. Since the differential operator $(1+\bar{\Delta}_g)^2$ is an injective self-adjoint elliptic operator, L_g is an injective Fredholm operator from S_2^k to S_2^{k-4} for each $g \in \mathfrak{R}^s$. First, we see that L_g has a continuous linear inverse L_g^{-1}: $S_2^{k-4} \to S_2^k$. For $k-4 \geqq 0$, L_g is surjective by the decomposition theorem (e.g. [1, Ch. XI]). For a general k, $S_2^{k'}$ is a dense subspace of S_2^k if $k' \geqq k$, hence $L_g(S_2^k)$ is dense in S_2^{k-4} from the above. On the other hand, $L_g(S_2^k)$ is closed because L_g is a Fredholm operator. Thus, L_g is surjective and accordingly has a continuous inverse by the open mapping theorem. Next, it is easily shown that the maps are of C^∞ class on the same lines as the proofs by Omori [2, Lemmas 1.3 and 2.11]. □

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Department of Applied Mathematics and Physics
Faculty of Engineering
Kyoto University
Kyoto 606, Japan

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