A CHARACTERIZATION OF ZOLL RIEMANNIAN METRICS ON THE 2-SPHERE
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CORRIGENDUM

MARCO MAZZUCCHELLI AND STEFAN SUHR

In the proof of [MS18, Theorem 3.1], we did not provide a complete justification for the equality $\kappa^2 = \pi_* \mathrm{ev}^* \nu$ in $H^2(\Lambda; \mathbb{Z}_2)$. Actually, we do not really need to justify this for the sake of the proof. It is enough to argue as follows. The proof shows that the cohomology class $\eta := \pi_* \mathrm{ev}^* \nu \in H^2(\Lambda; \mathbb{Z}_2)$ satisfies $\iota^* \eta = \iota^* \kappa^2$. This implies that $\iota_* h_1 = \iota_*(\iota^* \kappa^2 \frown h_3) = \iota_*(\iota^* \eta \frown h_3) = \eta \frown \iota_* h_3$. Therefore, since $\ell_1 = \ell_3$, Lusternik-Schnirelmann Theorem implies that the restriction $\eta|_U$ is non-zero in $H^2(U; \mathbb{Z}_2)$ for all open neighborhoods $U \subset \Lambda$ of the set of simple closed geodesics with length ℓ_3. We can now carry over the remaining part of the proof replacing κ^2 by η everywhere.

References

[MS18] M. Mazzucchelli and S. Suhr, *A characterization of Zoll Riemannian metrics on the 2-sphere*, Bull. Lond. Math. Soc. **50** (2018), 997–1006.

MARCO MAZZUCCHELLI
CNRS, ÉCOLE NORMALE SUPÉRIEURE DE LYON, UMPA
46 ALLÉE D'ITALIE, 69364 LYON CEDEX 07, FRANCE
E-mail address: marco.mazzucchelli@ens-lyon.fr

STEFAN SUHR
RUHR-UNIVERSITÄT BOCHUM, FAKULTÄT FÜR MATHEMATIK
44780 BOCHUM, GERMANY
E-mail address: stefan.suhr@rub.de