CORRECTION TO "STEIN AND WEINSTEIN STRUCTURES ON DISK COTANGENT BUNDLES OF SURFACES"

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ABSTRACT. After our article titled "Stein and Weinstein structures on disk cotangent bundles of surfaces" was accepted and appeared online, it was pointed out by Sylvain Courte that our proof of the existence of the symplectomorphisms in Theorem 1.1 is flawed. Our proof of the existence of the contactomorphisms, however, holds true in both parts of Theorem 1.1.

The main result of [2] should be restated as follows:

Theorem 0.1. *(a) Suppose that Σ_g is a closed, connected, smooth and orientable surface of genus $g \geq 1$. Then the boundary of the Stein handlebody diagram depicted in* [2, Figure 1] *is contactomorphic to* $(\mathbb{S}T^*\Sigma_g, \xi_{can})$.

(b) Suppose that N_k is a closed, connected, smooth and nonorientable surface of genus $k \geq 1$, i.e., $N_k = \#_k\mathbb{R}\mathbb{P}^2$. Then the boundary of the Stein handlebody diagram depicted in [2, Figure 2] *is contactomorphic to* $(\mathbb{S}T^*N_k, \xi_{can})$.

Proof. The proof of (a) is given in [2, Remark 3.2] and the proof of (b) holds true as given in [2, Section 3.2]. □

In [2, Theorem 1.1], we also claimed that the Stein domain depicted in [2, Figure 1] is symplectomorphic to $(\mathbb{D}T^*\Sigma_g, \omega_{can})$ and the Stein domain depicted in [2, Figure 2] is symplectomorphic to $(\mathbb{D}T^*N_k, \omega_{can})$. Our proof (in both cases) is flawed since first of all we misquoted [1, Theorem 13.8] as Theorem 3.1 in our paper. The conclusion of [1, Theorem 13.8] is the existence of an isotopy of *embeddings* $h_t : V \to V$ with $h_0 = Id$, and satisfying certain properties but in [2, Theorem 3.1] we inadvertently quoted this part as the existence of a *diffeomorphism* $h : V \to V$ isotopic to the identity. Regardless of this error, we now realized that Theorem 13.8 in [1] does not make any statement about relating a Weinstein structure to a given Stein structure, but only about realizing a Weinstein structure as a Stein structure within a given complex manifold. Therefore, although the existence of the aforementioned symplectomorphisms is plausible, it seems impossible to prove it using [1, Theorem 13.8].

Finally, we would like to emphasize that the discussion about the surgery diagrams for the canonical contact structures in Section 4 of our article [2] is unaffected by this error.

REFERENCES

[1] K. Cieliebak and Y. Eliashberg, *From Stein to Weinstein and back. Symplectic geometry of affine complex manifolds.* American Mathematical Society Colloquium Publications, 59. American Mathematical Society, Providence, RI, 2012.
[2] B. Ozbagci, *Stein and Weinstein structures on disk cotangent bundles of surfaces*, Arch. Math. 13 (2019), no.6, 661-670.

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