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Erratum to "On surface links whose link groups are abelian"

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In the article [1] we claimed a strict inequality $n(n-1) < 4g(S)$ for an abelian surface link S of rank n (Theorem 2.1). However, there is an error in proving the strictness of the inequality, so the correct statement is:

THEOREM 2·1. *If S is an abelian surface link of rank $n > 1$, then we have an inequality*

$$n(n-1) \leqslant 4g(S).$$

Accordingly, the correct statements of Corollary 2·2 and Corollary 2·4 are:

COROLLARY 2·2. *The rank of an abelian T^2-link is at most* 5.

COROLLARY 2·4. *Let S be an abelian surface link. For each $g \geqslant 0$, the number of genus g components of S is at most $4g+1$.*

The results in other sections are not affected by this error.

In the proof, we wrote that $H_2(\mathbb{Z}^n;\mathbb{Z})$ is isomorphic to $H_2(S^4-S;\mathbb{Z})$ implies $\pi_2(S^4-S) \cong 0$ but this is definitely false: the homology Serre spectral sequence for $(S^4-S) \to K(\mathbb{Z}^n,1)$ tells that the difference between $H_2(S^4-S;\mathbb{Z})$ and $H_2(K(\mathbb{Z}^n,1))$ is $\pi_2(S^4-S)_{\pi_1(S^4-S)}/d^3(H_3(K(\mathbb{Z}^n,1)))$ so $\pi_2(S^4-S)$ might be non-trivial. Here $\pi_2(S^4-S)_{\pi_1(S^4-S)}$ is the largest quotient of $\pi_2(S^4-S)$ on which $\pi_1(S^4-S)$ acts trivially, and

$$d^3 : H_3(K(\mathbb{Z}^n,1);\mathbb{Z}) = E^3_{3,0} \longrightarrow E^3_{0,2} = H_0(K(\mathbb{Z}^n,1);\pi_2(S^4-S)) \cong \pi_2(S^4-S)_{\pi_1(S^4-S)}$$

is the differential of the Serre spectral sequence.

In particular, the existence of an abelian surface link of rank 4 with genus 3, and of rank 5 with genus 4, is an open problem.

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REFERENCES

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