ERRATUM TO "TORSION IN THE BORDISM OF ORIENTED INVOLUTIONS"

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It has been discovered that the paper [2] contains a serious error. In fact, the main theorem [2, p. 541] is false as stated.

The error is at the bottom of p. 546, where the "homomorphism" \( d: W_m(G, F, F') \to \Omega_{m-1}(G, F, F') \) appears. Unfortunately, R. E. Stong has discovered that the construction \( d \) is not well defined if \( G = \mathbb{Z}_2^k \) and \( k > 2 \). A full discussion is to appear in [3].

The effect of this mistake is that we can no longer prove that the extension homomorphism \( e: \Omega_*(\mathbb{Z}_2^2) \to \Omega_*(\mathbb{Z}_2) \) is zero on classes of order two. In fact, it is not. To see this, one may define an invariant \( \omega: \Omega_*(\mathbb{Z}_2^2) \to \mathbb{Z}_2 \) to be the composition

\[
\Omega_*(\mathbb{Z}_2^2) \xrightarrow{\text{ab}} W(\mathbb{Z}_2^2; \mathbb{Z}) \xrightarrow{\pi} W(\mathbb{Z}_2; \mathbb{Z}) \xrightarrow{\text{trs}} \mathbb{Z}_2.
\]

Here \( \text{ab} \) is the Atiyah-Bott homomorphism, \( \text{trs} \) the torsion invariant (for both, see [1]), and \( \pi \) is defined as follows: given a \( \mathbb{Z}(\mathbb{Z}_2^2) \)-module \( V \) with equivariant inner product, let generators of \( \mathbb{Z}_2^2 \) act on \( V \) by isometries \( A \) and \( B \). Then \( \pi[V] = [K] \) for \( K = \text{Ker}(A - B) \). It is easy to check that this is well defined.

If we remember [1, Theorem 10] that \( \text{trs}[W] \) is the number (mod 2) of copies of \( \mathbb{Z}(\mathbb{Z}_2) \) in \( W \), it is also easy to check that \( \omega \cdot e(x) = \text{trs}(x) \) for any \( x \in \Omega_*(\mathbb{Z}_2) \). Then we recall that \( \text{trs}(x_0) \neq 0 \) if \( x_0 \in \Omega_4(\mathbb{Z}_2) \) is the element of order two [1, Theorem 4]. Thus \( e(x_0) \neq 0 \).

Therefore it is not true, as asserted in [2], that any class in \( \Omega_*(\mathbb{Z}_2^2) \) represented by a stationary-point free action has infinite order. It may still be true that all torsion of \( \Omega_*(\mathbb{Z}_2^2) \) has order two, but the argument of [2] does not suffice to prove this.

REFERENCES


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