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Correction to "Locally flat 2-spheres in simply connected 4-manifolds"

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In the proof of Theorem 1.2 of [3], p. 410, line-12, we asserted that $[P, h, z] \oplus H(\Lambda^r)$ has an orthogonal summand equivalent to $H(\Lambda^{r+1})$. This is indeed the case when $b_2(N) > |\sigma(N)| + 2$. For then $[H_2(N), \lambda, x] \oplus H(\mathbf{Z}^r)$ splits off a copy of $H(\mathbf{Z}^{r+1})$ and the assertion follows by Theorem 4.6. However, as already pointed out in Remark 4.5, $[H_2(N), \lambda, x] \oplus H(\mathbf{Z}^r)$ may not split off $H(\mathbf{Z}^{r+1})$ in the case $b_2(N) = |\sigma(N)| + 2$. Thus to show that the stable equivalence of (4.13) implies $[P, h, z] \cong [P', h', z']$ in this case as well, one argues that (i) $[P, h] \otimes_\Lambda \mathbf{Z}[\zeta_n]$ has an orthogonal summand equivalent to $H(Z[\zeta_n])$ for each $n \mid d$, $n > 1$, and (ii) $[P, h] \otimes_\Lambda \hat{\Lambda}$ has an orthogonal summand of rank ≥ 1 which is perpendicular to $z \otimes 1$. (This works also in the case $b_2(N) > |\sigma(N)| + 2$.) For then the conclusion of Theorem 4.2 holds (see Remark 4.5) and the rest of the argument goes through without change. It remains to show (i) and (ii). As before, (i) follows from the signature hypothesis $b_2(N) > \max_{0 \leq j < d} |\sigma(N) - 2j(d-j)(1/d^2)x \cdot x|$ by Theorem 10 of [4]. Since $[P, h] \otimes_\Lambda \hat{\mathbf{Z}}$ has an orthogonal summand of rank ≥ 1 which is perpendicular to $z \otimes 1$, (ii) follows by the commutative diagram on p. 406.

In the proof of Theorem 4.6, p. 407, line-7, the result of [1] was misapplied. The argument was made for a primitive class $\hat{z}$ whereas [1] requires the class to be unimodular. Therefore the argument should be applied instead to the unimodular class in $\hat{P} \otimes_{\hat{\Lambda}} \hat{Z}$ whose d multiple equals $\hat{z} \otimes 1$. This yields an isometry η of $[P, h] \otimes_\Lambda \hat{\mathbf{Z}}$ which maps $\hat{z} \otimes 1$ to the class corresponding to $\hat{\alpha}(z \otimes 1)$. It follows from the discussion in [2, ch. IV §3] that, for $k > 2$, there are such isometries η which lift to $[P, h] \otimes_\Lambda \hat{\Lambda}$. Since $\hat{z} \in \hat{P}^G$, any lifted isometry will map $\hat{z}$ to $\hat{\alpha}(z \otimes 1)$, as required.

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