Corrigendum to “Spin structures on flat manifolds with cyclic holonomy” [Comm. Algebra 36 (2008), 11–22]

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Since the publication of our paper we have noticed that Theorem 3.2 is not correct as it stands. Some cases, which also lead to spin structures, are omitted from the statement. The other results of the paper are not affected by this error. Here is the correct version of the theorem.

Theorem 3.2. *Let* $A \in \mathrm{SL}(n, \mathbb{R})$ *be of order* 4*, satisfying* $(n - \mathrm{Trace}(A^2))/2 \equiv 2 \pmod 4$*. Put* $G = \langle A \rangle$*, and let* δ *and* Γ *be as in* (3)*. Choose an embedding* $\rho : \Gamma \to E(n)$*.*

Write $\Lambda = \oplus_{i=1}^{m} \Lambda_i$ *with indecomposable* $\mathbb{Z}G$*-lattices* Λ_i*,* $i = 1, \ldots, m$*. Decompose* δ *accordingly as* $\delta = \sum_{i=1}^{m} \delta_i$ *with* $\delta_i \in H^1(G, \mathbb{Q} \otimes_{\mathbb{Z}} \Lambda_i/\Lambda_i)$*.*

Then (ρ, Γ) *has a spin structure if and only if, for some* $1 \leq i \leq m$*,* (Λ_i, δ_i) *is equivalent to* $(M_1, (1/4))$ *or* $(M_9(0), (1/4, 0, 0, 0)^t)$*.*

The error occurs in the third paragraph of the proof, where we write: “Next suppose that $\bar{\Lambda}_i$ has a unique nonzero fixed vector v_i. Then v_i lies in the radical of $\bar{\Lambda}_i$.” The latter statement is only true if $\bar{\Lambda}_i$ is not the trivial $\mathbb{F}_2 G$-module. Thus if $\bar{\Lambda}_i$ is isomorphic to the trivial module and $\bar{\delta}_i' = v_i$, then $\bar{\delta}_i'$ does not lie in the radical of $\bar{\Lambda}_i$. This gives rise to the occurrence of $(M_1, (1/4))$ in the corrected statement.

Finally we take this opportunity to correct a further error in the proof of Theorem 3.2. In the first line on Page 18, it should read “In this case, $\bar{\delta}_i' \in \langle (1, 1, 0, 0)^t \rangle$.” instead of “$\delta' = (1, 1, 0, 0)^t$”.