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Proof. The "trivial" involution $Z(Z) \to Z(Z)$ which corresponds to the orientable case $w = 1$ is of course not really the identity; it maps x into x^{-1}. It is easy to check that S belongs to $SU(Z(Z))$ with respect to this involution. $r(S) \in SU_1(Z(Z_2))$ corresponds under the identification of $Z(Z_2)$ with Γ to the pair (A_1, A_2), where

$$A_1 = \begin{pmatrix} 3 & 2 \\ -2 & -1 \end{pmatrix}, \qquad A_2 = \begin{pmatrix} -1 & -2 \\ 2 & 3 \end{pmatrix}$$

and the first element of $A_1 A_2^{-1}$ is 5 whence $c(r(S)) = c(A_1, A_2)$ is non-trivial. The result now follows from the fact [2], [6])) that $L^+_{2k+1}(Z) = Z_2$ and from Theorem 4.5.

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