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Cohomology of $\mathbb{N}$-Graded Lie Algebras of Maximal Class over $\mathbb{Z}_2$

We compute the cohomology with trivial coefficients of Lie algebras $\mathfrak{m}_0$ and $\mathfrak{m}_2$ of maximal class over the field $\mathbb{Z}_2$. In the infinite-dimensional case, we show that the cohomology rings $H^*(\mathfrak{m}_0)$ and $H^*(\mathfrak{m}_2)$ are isomorphic, in contrast to the case of the ground field of characteristic zero, and we obtain a complete description of them. In the finite-dimensional case, we find the first three Betti numbers of $\mathfrak{m}_0(n)$ and $\mathfrak{m}_2(n)$ over $\mathbb{Z}_2$.