

\mathbb{Z} -graded Hom-Lie superalgebras

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Abstract. In this paper, we introduce the notions of \mathbb{Z} -graded Hom-Lie superalgebras, and we show that there is a maximal (resp., minimal) \mathbb{Z} -graded Hom-Lie superalgebra for a given local Hom-Lie superalgebra. Moreover, we introduce the invariant bilinear forms on a \mathbb{Z} -graded Hom-Lie superalgebra and prove that a consistent supersymmetric α -invariant form on the local part can be extended uniquely to a bilinear form with the same property on the whole \mathbb{Z} -graded Hom-Lie superalgebra. Furthermore, we check the condition in which the \mathbb{Z} -graded Hom-Lie superalgebra is simple.

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