

On isomorphism criteria for Leibniz central extensions of a linear deformation of μ_n .

Abstract

This paper deals with the classification problems of Leibniz central extensions of linear deformations of a Lie algebra. It is known that any n -dimensional filiform Lie algebra can be represented as a linear deformation of n -dimensional filiform Lie algebra μ_n given by the brackets $[e_i, e_0] = e_{i+1}$, $i = 0, 1, \dots, n-2$, in a basis $\{e_0, e_1, \dots, e_{n-1}\}$. In this paper we consider a linear deformation of μ_n and its Leibniz central extensions. The resulting algebras are Leibniz algebras, this class is denoted here by $\text{Ced}(\mu_n)$. We choose an appropriate basis of $\text{Ced}(\mu_n)$ and give general isomorphism criteria. By using the isomorphism criteria, one can classify the class $\text{Ced}(\mu_n)$ for any fixed n . Two relevant maple programs are provided.

Keyword: Central extension; Filiform Leibniz algebra; Isomorphism criterion; Lie algebra.