

Sobre extensiones α -centrales universales de álgebras Hom-Leibniz

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Abstract.

A Hom-Leibniz algebra [2] is a \mathbb{K} -vector space L endowed with a bilinear map $[-, -] : L \times L \rightarrow L$ and a \mathbb{K} -linear map $\alpha_L : L \rightarrow L$ satisfying, the so called Hom-Leibniz identity, $[\alpha_L(x), [y, z]] = [[x, y], \alpha_L(z)] - [[x, z], \alpha_L(y)]$, for all $x, y, z \in L$. If $[x, y] = -[y, x]$, then we have a Hom-Lie algebra. When the twisting map $\alpha_L = Id_L$, then the notion of Leibniz (Lie) algebra is recovered.

The main goal of this talk is to present the generalization of classical results that characterize universal central extensions of Leibniz algebras to the framework of Hom-Leibniz algebras. Nevertheless, in this generalization fails the key result that claims the composition of central extensions is central as well. This singularity motivates the introduction of new concepts as α -perfect Hom-Leibniz algebra ($L = [\alpha_L(L), \alpha_L(L)]$) and α -central extension ($0 \rightarrow (M, \alpha_M) \rightarrow (K, \alpha_K) \xrightarrow{\pi} (L, \alpha_L) \rightarrow 0$ is α -central if $\alpha_M(M) \subseteq Z(K)$). Then the corresponding characterizations are given.

On the other hand, we analyze the relationship between the universal α -central extension of an α -perfect Hom-Lie algebra in the categories of Hom-Lie and Hom-Leibniz algebras (see [1]).

References

- [1] Casas, J. M.; Insua, M. A.; Pacheco Rego, N. Universal central extensions of Hom-Leibniz algebras, *arXiv: 1209.6266 (2012)*.
- [2] A. Makhlouf, A.; Silvestrov, S. Hom-algebra structures, *J. Gen. Lie Theory Appl.* **2** (2008), no. 2, 51–64.