

Hom-actions for Hom-groups

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Abstract

The notion of the Hom-groups is defined as a generalization of a non-associative group. They can be obtained by twisting the associative operation with a compatible bijection mapping. In this work, we give some constructions by twisting and also give properties related to Hom-groups. We introduce the different notions of actions concerning a Hom-groups. Present the theorem for a class equation. There follows some application for p -Hom-groups are illustrated.

Key Words: Hom-groups; Hom-subgroups; Hom-quotient groups; Isomorphism; Hom-group actions; Class equation.

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References

- [1] N. Aizawa and H. Sato, q -deformation of the Virasoro algebra with central extension, *Phys. Lett. B* 256 (1991), 185-190.
- [2] I. Basdouri., S. Chouaibi., A. Makhoulf., E. Peyghan. Free Hom-groups, Hom-rings and Semisimple modules, *arXiv:2101.03333v1*, (2020).
- [3] H. Bouremel, Z. Chebel, H. Adimi, Ordered Hom-groups based on Hom-compatibility, *Rendiconti del Circolo Matematico di Palermo Series 2*, (2022).
- [4] M. Chaichian, P. Kulish, and J. Lukierski, q -deformed Jacobi identity, q -oscillators and q -deformed infinite-dimensional algebras, *Phys. Lett. B* 237 (1990), 401-406.
- [5] L. Chen., T. Feng., Yao Ma., R. Saha.,H. Zhang., On Hom-Groups and Hom-Group actions. *Arxiv.org*.
- [6] T. L. Curtright and C. K. Zachos, Deforming maps for quantum algebras, *Phys.Lett. B* 243 (1990), 237-244.

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- [7] J. T. Hartwig, D. Larsson and S. D. Silvestrov, Deformations of Lie algebras using σ -derivations, *J. Algebra* 295 (2006), no. 2, 314-361.
- [8] M. Hassanzadeh. Hom-groups, Representations and homological algebra, *Colloq. Math.* 158 (2019), no. 1, 21–38.
- [9] M. Hassanzadeh. Lagrange’s theorem For Hom-Groups, *Rocky Mountain J. Math.* 49 (2019), no. 3, 773–787.
- [10] M. Hassanzadeh, On Antipodes of Hom-Hopf Algebras, <https://arxiv.org/abs/1803.01441> (2018).
- [11] J. Jiang, S. K. Mishra, Y. Sheng, Hom-Lie algebras and Hom-Lie groups, integration and differentiation, *arXiv:1904.06515*.
- [12] C. Laurent-Gengoux, A. Makhlouf, and J. Teles, Universal algebra of a Hom-Lie algebra and grouplike elements, *Journal of Pure and Applied Algebra*, Volume 222, Issue 5, (2018), P. 1139–1163.
- [13] A. Makhlouf and S. Silvestrov, Hom-algebra structures, *J. Gen. Lie Theory Appl.* 2(2), 51–64 (2008).
- [14] A. Makhlouf A. and S. Silvestrov, Notes on formal deformations of Hom-associative and Hom-Lie algebras, *Forum Math.* 22(4), 715–759 (2021).
- [15] I. Martin Isaacs, *Finite group theory*, Volume 92 of Graduate studies in mathematics, American Mathematical Soc., 2008.
- [16] D. Yau, Enveloping algebras of Hom-Lie algebras, *J. Gen. Lie Theory Appl.* 2 (2008), no. 2, 95–108.