

Γ -FIELD

MARAPUREDDY MURALI KRISHNA RAO

Department of Mathematics
GITAM University

Visakhapatnam-530 045, Andhra Pradesh, India

e-mail: mmarapureddy@gmail.com

Abstract

In this paper, we introduce the notion of a Γ -field as a generalization of a field, study their properties of a Γ -field and prove that M is a Γ -field if and only if M is an integral, simple and commutative Γ -ring.

Keywords: Γ -field, Γ -ring, Γ -semiring, Γ -group, Γ -semigroup, regular Γ -ring, integral Γ -ring, simple Γ -ring, commutative Γ -ring.

2010 Mathematics Subject Classification: 06F25, 06F99.

REFERENCES

- [1] T.K. Dutta and S. Kar, *On regular ternary semirings*, in: K.P. Shum, Z.H. Wan and J.P. Zhang (Eds.), *Advances in Algebra, Proceedings of the ICM Satellite Conference in Algebra and Related Topics* (Singapore, World Scientific, 2003) 343–355.
- [2] T.K. Dutta and N.C. Adhikari, *On Γ -semigroup with the right and left unities*, *Soochow J. Math.* **19** (1993) 461–474.
- [3] D.H. Lehmer, *A ternary analogue of Abelian groups* *Am. J. Math.* **59** (1932) 329–338.
- [4] W.G. Lister, *Ternary rings*, *Tran. of American Math. Society* **154** (1971) 37–55.
- [5] M. Murali Krishna Rao, *Γ -semirings I*, *Southeast Asian Bull. Math.* **19** (1995) 49–54.
- [6] M. Murali Krishna Rao, *Γ -semirings II*, *Southeast Asian Bull. Math.* **21** (1997) 281–287.
- [7] M. Murali Krishna Rao, *The Jacobson radical of Γ -semiring*, *Southeast Asian Bull. Math.* **23** (1999) 127–134.
- [8] M. Murali Krishna Rao, *Γ -semiring with identity*, *Discuss. Math. General Algebra and Appl.* **37** (2017) 189–207.
doi:10.7151/dmgaa.1276

- [9] M. Murali Krishna Rao, *A generalization of a group*, Communicated.
- [10] M. Murali Krishna Rao, *Ideals in ordered Γ -semirings*, Discuss. Math. General Algebra and Appl. **38** (2018) 47–68.
doi:10.7151/dmgaa.1284
- [11] M. Murali Krishna Rao, *Bi-interior ideals in semigroups*, Discuss. Math. General Algebra and Appl. **38** (2018) 69–78.
doi:10.7151/dmgaa.1284
- [12] M. Murali Krishna Rao, *Left bi-quasi ideals of semirings*, Bull. Int. Math. Virtual Inst. **8** (2018) 45–53.
doi:10.7251/BIMVI1801045R
- [13] M. Murali Krishna Rao, *Bi-quasi-ideals and fuzzy bi-quasi-ideals of Γ -semigroups*, Bull. Int. Math. Virtual Inst. **7** (2017) 231–242.
doi:10.7251/BIMVI1801045R
- [14] M. Murali Krishna Rao, *A study of Γ -semiring M as a soft semiring (F, Γ) over M* , Bull. Int. Math. Virtual Inst. **8** (2018) 533–541.
doi:10.7251/BIMVI1803533R
- [15] J. von Neumann, *On regular rings*, Proc. Nat. Acad. Sci. USA **22** (1936) 707–713.
- [16] N. Nobusawa, *On a generalization of the ring theory*, Osaka J. Math. **1** (1964) 81–89.
- [17] M.K. Sen and N.K. Saha, *On Γ -semigroup I*, Bull. Cal. Math. Soc. **78** (1986) 180–186.
- [18] M.K. Sen, *On Γ -semigroup*, Proc. of International Conference of Algebra and Its Application (Decker Publicaiton, New York, 1981) 301–308.
- [19] H.S. Vandiver, *Note on a simple type of algebra in which cancellation law of addition does not hold*, Bull. Amer. Math. Soc. (N.S.) **40** (1934) 914–920.

Received 30 January 2019
Revised 12 February 2019
Accepted 18 February 2019