

ON Γ -SEMIRING WITH IDENTITY

MARAPUREDDY MURALI KRISHNA RAO

Department of Mathematics, GIT, GITAM University
Visakhapatnam- 530 045, A.P., India

e-mail: mmarapureddy@gmail.com

Abstract

In this paper we study the properties of structures of the semigroup $(M, +)$ and the Γ -semigroup M of Γ -semiring M and regular Γ -semiring M satisfying the identity $a + a\alpha b = a$ or $a\alpha b + a = a$ or $a + a\alpha b + b = a$ or $a + 1 = 1$, for all $a \in M, \alpha \in \Gamma$. We also study the properties of Γ -semiring with unity 1 which is also an additive identity.

Keywords: Γ -semigroup, Γ -semiring, regular Γ -semiring.

2010 Mathematics Subject Classification: 20M10, 16Y60.

REFERENCES

- [1] T.K. Dutta and S. Kar, *On regular ternary semirings*, Advances in Algebra, Proceedings of the ICM Satellite Conference in Algebra and Related Topics, World Scientific, (2003) 343–355.
- [2] H. Lehmer, *A ternary analogue of abelian groups*, American J. Math. **59** (1932) 329–338.
doi:10.2307/2370997
- [3] W.G. Lister, *Ternary rings*, Tran. Amer. Math. Soc. **154** (1971) 37–55.
doi:10.2307/1995425
- [4] J. Hanumanthachari and K. Venuraju, *The additive semigroup structure of semiring*, Math. Seminar Note **11** (1983) 381–386.
- [5] M.M.K. Rao, Γ -semirings-I, Southeast Asian Bull. Math. **19** (1995) 49–54.
- [6] M.M.K. Rao, Γ -semirings-II, Southeast Asian Bull. Math. **21** (1997) 281–287
- [7] M.M.K. Rao, *The Jacobson radical of Γ -semiring*, Southeast Asian Bull. Math. **23** (1999) 127–134.
- [8] M.M.K. Rao and B. Venkateswarlu, *Regular Γ -incline and field Γ -semiring*, Novi Sad J. Math. **45** (2015) 155–171.
emis.ams.org/journals/NSJOM/Papers/45-2 /NSJOM-45-2-155-171.pdf

- [9] N. Nobusawa, *On a generalization of the ring theory Osaka*, J. Math. **1** (1964) 81–89.
ir.library.osaka-u.ac.jp/dspace/bitstream/11094/12354/1/ojm_01-01-08.pdf
- [10] M. Satyanarayana, *On the additive semigroup of ordered semirings*, Semigroup Forum **31** (1985) 193–199.
[doi:10.1007/BF02572648](https://doi.org/10.1007/BF02572648)
- [11] M.K. Sen, *On Γ -semigroup*, Proc. of International Conference of Algebra and Its Application, Decker Publicaiton (New York, 1981) 301–308.
- [12] H.S. Vandiver, *Note on a simple type of algebra in which the cancellation law of addition does not hold*, Bull. Amer. Math. **40** (1934) 914–920.
[doi:10.1090/s0002-9904-1934-06003-8](https://doi.org/10.1090/s0002-9904-1934-06003-8)
- [13] T. Vasanthi and N. Sulochana, *Semiring satisfying the identity*, Int. J. Math. Archive **3** (2012) 3393–3399.
- [14] T. Vasanthi and C. Venkata Lakshmi, *Properties of semirings*, Int. J. Math. Archive **4** (2013) 222–227.

Received 27 January 2017

Revised 26 July 2017

Accepted 4 August 2017