

TRANSFORMATION SEMIGROUPS ASSOCIATED TO Γ -SEMIGROUPS

DARIUSH HEIDARI

*Department of Mathematics, Najafabad Branch
Islamic Azad University
Najafabad, Isfahan, Iran*

e-mail: dheidari82@gmail.com

AND

MARZIEH AMOOSHAHI

*Department of Mathematics, Najafabad Branch
Islamic Azad University
Najafabad, Isfahan, Iran*

e-mail: mz.amooshahi@gmail.com

Abstract

The concept of Γ -semigroups is a generalization of semigroups. In this paper, we associate two transformation semigroups to a Γ -semigroup and we call them the left and right transformation semigroups. We prove some relationships between the ideals of a Γ -semigroup and the ideals of its left and right transformation semigroups. Finally, we study some relationships between Green's equivalence relations of a Γ -semigroup and its left (right) transformation semigroup.

Keywords: transformation semigroup, Γ -semigroup, Green's relations.

2010 Mathematics Subject Classification: 20M20.

REFERENCES

- [1] S.M. Anvariye, S. Mirvakili and B. Davvaz, *On Γ -hyperideals in Γ -semihypergroups*, Carpathian **26** (2010) 11–23.
- [2] R. Chinram and P. Siammai, *On Green's relations for Γ -semigroups and reductive Γ -semigroups*, Int. J. Algebra **2** (2008) 187–195.
- [3] A.H. Clifford and G.B. Preston, *The Algebraic Theory of Semigroups* (American Mathematical Society, 1967).

- [4] T.K. Dutta and N.C. Adhikari, *On Noetherian Γ -semigroup*, Kyungpook Math. J. **36** (1996) 89–95.
- [5] T.K. Dutta and N.C. Adhikary, *On Γ -semigroup with right and left unities*, Soochow J. of Math **19**(4) (1993) 461–474.
- [6] D. Heidari, S.O. Dehkordi and B. Davvaz, *Γ -Semihypergroups and their properties*, UPB. Sci. Bull. Ser A **72**(1) (2010) 197–210.
- [7] D. Heidari and B. Davvaz, *Γ -hypergroups and Γ -Semihypergroups associated to binary relations*, Iran. J. Sci. Technol. Trans. A Sci. **A2** (2011) 69–80.
- [8] J.A. Green, *On the structure of semigroups*, Annal of Mathematics **54** (1951) 163–172. doi:10.2307/1969317
- [9] N.K. Saha, *On Γ -semigroup II*, Bull. Cal. Math. Soc. **79** (1987) 331–335.
- [10] M.K. Sen, *On Γ -semigroups*, in: Int. Conf. on Algebra and it's Appl, Decker Publication (Ed(s)), (New York, 1981).
- [11] M.K. Sen and N.K. Saha, *On Γ -semigroup I*, Bull. Cal. Math. Soc. **78** (1986) 180–186.
- [12] A. Seth, *Γ -group congruences on regular Γ -semigroups*, Int. J. Math. Math. Sci. (1992) 103–106.
- [13] M. Siripitukdet and A. Iampan A, *On the Ideal Extensions in Γ -semigroups*, Kyungpook Math. J. **48** (2008) 585–591. doi:10.5666/KMJ.2008.48.4.585
- [14] M. Siripitukdet and A. Iampan, *Least Regular Order with Respect to a Regular Congruence on Ordered Γ -Semigroups*, Acta Mathematica Sinica, English Series **28**(5) (2012) 975–982. doi:10.1007/s10114-011-9702-x

Received 17 August 2013
Revised 10 September 2013