

Abstract No: PO-11

Constructing a new polygroup from a given polygroup induced by the double cosets of a group

R. Thushanthani*

Department of Mathematics and Statistics, University of Jaffna, Sri Lanka

*rajendranthushanthani@gmail.com

A polygroup theory is a branch of the hyperstructure theory that generalizes the classical algebraic theories. A polygroup is a multi-valued algebraic structure and basically, polygroups are groups like objects. Groups are sets that obeying certain axioms as well define, associativity, the existence of identity and existence of inverse. The basic idea of a polygroup is that generalize the idea of a group. With that, the mathematical operation is the major difference in between a group and a polygroup is that group has a binary operation whereas polygroup have a hyper operation. Here, we consider polygroup under the hyper operation and define subpolygroup structure of a polygroup induced by the double cosets of a group such as normal subpolygroup, subpolygroup criteria, maximal subpolygroup, ascending and descending chain condition for polygroup. With that, we investigate some important properties of subpolygroup structure of a polygroup induced by the double cosets of a group. For example, the collection of all double cosets of subgroup forms a polygroup, element structure and subpolygroup structure from any given polygroup, normal subpolygroup structure, the relation between normal polygroup and normal subpolygroup, both ascending and descending chain conditions for subpolygroups and maximal subpolygroup structure. Further, we construct a new polygroup from a given polygroup. Finally, we investigate isomorphic theorem for the polygroup by using above our results.

Keywords: Polygroup structure, Double cosets, Isomorphic

Acknowledgement: This work was supported by Department of Mathematics and Statistics, University of Jaffna, Sri Lanka for providing me important references to the literature.