

# Abstract

## $\beta$ - hypergroupoids on Partially Ordered Sets

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**Abstract.** In this paper we will attend to the study of the multioperation  $\circ$  on the partially ordered set  $M$  and to the multigroupoid  $(\mathcal{M} = (M \leq, \circ, I))$  defined in [13]. The properties of the multigroupoid, especially associativity are influenced by the structure of the carrier set  $M$ . We show that this is satisfied only for  $M$  which is equal to a chain and hence we prove that  $(\mathcal{M} = (M \leq, \circ, I))$  is associative only when the operation  $\circ$  is single-valued. Such restriction on  $\circ$  implies that the groupoid is an upper semilattice  $\mathcal{S} = (M, \vee, I)$  where the operation of supremum  $\vee = \circ$ . These will be studied in the opening part of this article where we repeat fundamental definitions and theorems from [13] without proofs. In the next part we introduce the conception of  $\beta$ -hypergroupoid and the conception of distinguishing of hypergroupoid. In the second part of the article the distinguishing subsets of hypergroupoids are studied. Finally the relation inter  $\beta$ -hypergroupoids and some distinguishing subsets is given.

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