Abstract

Hypergroupoids on Special Partially Ordered Sets

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We repeat the fundamental concepts used in the given paper in introduction of this abstract. After this we adduce the main results of the paper. Such

A hypergroupoid or a *multigroupoid* is a pair $(M, *)$ where M is a nonempty set and $* : M \times M \to \mathcal{P}^*(M)$ is a binary hyperoperation called also a multioperation. ($\mathcal{P}^*(M)$ is the system of all nonempty subsets of M). A semihypergroup is an associative hypergrupoid, i.e. hypergrupoid satisfying the equality $(a * b) * c = a * (b * c)$ for every triad a, b, $c \in M$.

We denote by $\mathcal{M}$ a partially ordered set M with the ordering $\leq$ and with the greatest element I which will be inscribed in the next part of this article with $\mathcal{M} = (M, \leq, I)$

We define for arbitrary $x, y \in M$ on $\mathcal{M} = (M, \leq, I)$ the binary hyperoperation $\circ$ as follows:

$$x \circ y = \{ \min (\mathcal{X} \cap \mathcal{Y})\}.$$

Where $\mathcal{X} = \{m_j \mid m_j \in M, x \leq m_j\}$ for all j from index set J and similarly the set $\mathcal{Y} = \{m_k \mid m_k \in M, y \leq m_k\}$ for all k from index set K. We inscribe then the set $\mathcal{M}$ with such defined binary operation with $\mathcal{M} = (M \leq, \circ, I)$.

It is known that this hyperoperation of multiplication $\circ$ is idempotent and commutative but not associative.[15]

The ordering of the carrier set M characterizes many properties of the hypergroupoid $\mathcal{M} = (M, \leq, \circ, I)$. It is introduced teh interval bounded by the elements $a, b \in M$. Hereafter a special ordered set is given:

Let $(M, \leq, \circ I)$ be a finite partly ordered multigroupoid satisfying the Jordan-Dedekind chain condition where the relation of partly ordering is defined as follows: $x \leq y$ for all x and y for which $d(y) = d(x) - 1$ and $x \parallel y$ if $d(x) = d(y)$. Hence x is in the relation $\leq$ with all its descendants.

Introduction of the conception of distinguishing is defined and various distinguishing subsets on hypergoupoids are studied. The properties of distinguishing subsets on concrete hypergroupoids are studied and some general theorems are given. The property β is defined and on hypergroupids studied. Finally the weakly distinguishing and covering of hypergoupoids are given and some general results are prooved.

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