ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

2. Algebra

1991 MS Classification: 20

Iranmanesh, A & Iradmusa, M. N., Tarbiat Modarres University, Iran

H_v-structures associated with generalized $P-$hyperoperations

Let H be a set and $\cdot : H \times H \longrightarrow \mathcal{P}(H)$ be a hyperoperation. The $(\cdot)$ in H is called weak associative if $(xy)z \cap x(yz) \neq \emptyset$ for all x, y, z in H. H is called H_v-quasigroup if the reproduction axiom is valid, i. e. $xH = Hx = H$ for all x in H. A hyperoperation $(R, +, \cdot)$ is called H_v-ring if
(i) $(+)$ and $(\cdot)$ are weak associative
(ii) the reproduction axiom is valid for $(+)$, and
(iii) $(\cdot)$ is weak distributive with respect to $(+)$, i. e.
$x(y+z) \cap (xy+xz) \neq \emptyset$ and $(x+y)z \cap (xz+yz) \neq \emptyset$ for all x, y, z in R.
Now, consider a ring $(R, +, \cdot)$ and we take $P_1, P_2 \subset R$ with $P_1 \neq \emptyset \neq P_2$. The hyperoperations $xP_1^*y = x + y + P_1$ and $xP_2^*y = xyP_2$, for all $x, y \in R$ are called P-hyperoperations. The $< R, P_1^*, P_2^* >$ becomes a H_v-ring called $P - H_v$-ring. In this paper we introduce generalized P-hyperoperations and find a sufficient condition so that R with these generalized P-hyperoperations become a $P - H_v$-ring. Then we introduce the concept of the homomorphism of $P - H_v$-rings and compute the number of these structures.