

HYPERLOOPS AND HYPERGROUPOIDS

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De Mario Francisco was the first one to introduce and study the concept of hypergroup. Motivated by his study, which was only for associative structures, we in this paper introduce hyper structures to the two non associative algebraic structures loops and groupoids.

Let $(Z_n(m), *)$ be a loop. For all $x, y \in Z_n(m)$ define ' \bullet ' by $x \bullet y = (x * y, (x * y) * q)$ where $q \in Z_n(m)$. Then $(Z_n(m), \bullet, q)$ is called the hyper loop. Suppose we define ' \bullet ' on $Z_n(m)$ as $x \bullet y = (x * y, x * (y * q))$ for $q \in Z_n(m)$ then $(Z_n(m), \bullet, q)$ is called the A-hyperloop.

It is important to note that A-hyperloops and hyper loops are in general different. We illustrate by an example that, the hyperloops of $(Z_n(m), *)$ partitions $Z_n(m) \times Z_n(m)$ where as A-hyperloop does not in general partition $Z_n(m) \times Z_n(m)$. We define in a similar manner the notion of hypergroupoids and A-hypergroupoids. But in case of groupoid G_n we prove in general hypergroupoids or A-hypergroupoids do not partition $G_n \times G_n$.

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