HYPER GROUPOIDS AND HYPER-LOOPS USING MODULO INTEGERS $Z_N$

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Recently we have used set of modulo integers $Z_n$ to define a new class of groupoids and a new class of loops. In this paper we introduce new notation on this two non-associative structures called hyper-groupoids $(Z_n, q)$ and hyper loops $(Z_m, p)$. The study of hyper-groups $(Z_m, q)$ was started by De Maria Francesco in 1989. He studied only for groups, which are associative structures. Here we initiate our study to non-associative structures like groupoids and loops and obtain some interesting results about them. Finally we compare the three hyper structures groupoids, groups and loops using the modulo integers.