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THE CHROMATIC NUMBER OF A COMMUTATIVE GROUPOID

W.B.Vasantha Kandasamy and K.Paramasivam

In this paper, we study the colouring problem of a commutative groupoid and define the chromatic number of a commutative groupoid. We construct a class of commutative groupoids using a set of all integers modulo n, on which different closed binary non associative operations are defined and we prove the following results:

1. For n = 2m, the chromatic number of the commutative groupoid Z_n is m.
2. For n = p^2, the chromatic number of the commutative groupoid Z_n is p.
3. For n = pq, where p, q are primes such that 2 < p < q, the chromatic number of the commutative groupoid Z_n is p.

e-mail: vasantha@iitm.ac.in
web: http://www.vasanthakandasamy.org