

ORTHOGONAL IDEALS IN THE LOOP RING Z_2L AND APPLICATION TO CODES

W.B.Vasantha Kandasamy and S. A. Anburaj

In this paper we study and characterize orthogonal ideals in loop rings and its relation to codes. Let RL denote the loop ring of a loop L over a ring R . We say two non zero ideals I and J of R to be orthogonal if

$I \cdot J = \{0\}$. Let Z_2L be the loop ring of a finite loop L of even order over the prime field of characteristic two. Then the loop ring Z_2L has nontrivial orthogonal ideals. Let L be a loop of order m and Z_p be a prime field of characteristic p . If $p \nmid m$ then the loop ring Z_pL has non trivial orthogonal ideals.

The orthogonal ideals in loop rings also have a similar relation to codes as that of orthogonal ideals in loop rings.

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e-mail: vasantha@iitm.ac.in
web: <http://mat.iitm.ac.in/~wby>