Hamming Distances of Cyclic Codes of Length z Over Finite Fields

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Abstract

In this paper cyclic codes of length z (where z is of the form $11p^s$) over finite field F_{p^m} are discussed. Cyclic codes are precisely the ideals of the chain ring $\frac{F_p m[x]}{\langle x^{1.1}p^s-1\rangle}$. In this class of repeated root cyclic codes are considered and their algebraic structure in terms of generator polynomials are obtained. Then Hamming distances of repeated-root cyclic codes are obtained.

Keywords

Cyclic codes, Repeated-root codes, Cyclotomic cosets, Minimal polynomial, Generator polynomial, Hamming distances.