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RELATION BETWEEN THE COVERING RADIUS AND RANK DISTANCE OF INDECOMPOSABLE BINARY CYCLIC CODES OVER 2-GROUPS

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Let F be a finite field and G a group of order n. Each right (left) ideal M of the group algebra FG is called an FG –code of length n. If G is a cyclic group then the corresponding FG-code M is called a cyclic code of length n. We define the concept of weight of an element indecomposability and minimum distance.

Suppose M is a linear code of length n and dimension k in Z_2G. Then the covering radius R of M is the weight of the coset leader of greatest weight where a coset of M is the set $x + M = \{x + m \mid m \in M\}$ for $x \in Z_2G$. and any element of minimum weight in a coset is called a leader of that coset. We mainly prove. Let C be an indecomposable cyclic code of length 2^n. Let the minimum distance of C be 2 and that of its orthogonal code $C^\perp$ be 2^r; $1 \le r \le m$. Then the covering radius of C is 2^{m-r} and that of $C^\perp$ is 2^{m-1}

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