

Primitive Idempotents in R_{8p^n} and Corresponding Codes

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Abstract:

Let F be a finite field of prime power order q , where q is of the form $8k + 3$. If q is primitive root modulo p^n , then the semi-simple group algebra FG of the cyclic group G of order $8p^n$ over F , where p is an odd prime and $n \geq 1$, has $8n + 5$ primitive idempotents. Explicit expressions for these primitive idempotents are obtained. Generating polynomials, minimum distances and dimensions of the corresponding minimal cyclic codes are also obtained.

Keywords:

Group algebra, cyclotomic cosets, primitive idempotents, generating polynomials.