

A Carlitz type result for linearized polynomials*

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Abstract

For an arbitrary q -polynomial f over \mathbb{F}_{q^n} we study the problem of finding those q -polynomials g over \mathbb{F}_{q^n} for which the image sets of $f(x)/x$ and $g(x)/x$ coincide. For $n \leq 5$ we provide sufficient and necessary conditions and then apply our result to study maximum scattered linear sets of $\text{PG}(1, q^5)$.

Keywords: Linearized polynomial, linear set, direction.

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Rezultat Carlitzevega tipa za linearizirane polinome*

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Povzetek

Za vsak q -polinom f nad \mathbb{F}_{q^n} obravnavamo problem iskanja tistih q -polinomov g nad \mathbb{F}_{q^n} , za katere množici slik funkcij $f(x)/x$ in $g(x)/x$ sovpadata. Za $n \leq 5$ podamo potrebne in zadostne pogoje in nato uporabimo naš rezultat pri obravnavi maksimalno razpršenih linearnih množic iz $\text{PG}(1, q^5)$.

Ključne besede: Linearizirani polinom, linearna množica, smer.

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