On a Class of Permutation Polynomials over Finite Fields

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Abstract

Permutation polynomials over finite fields are important in many applications, for example in cryptography. We want to provide families of polynomials that are rich in permutation polynomials. In particular we study polynomials of the form $F_{a,b}(x) = x^{\frac{q+1}{2}} + ax^{\frac{q+d-1}{d}} + bx$, where $a, b \in \mathbb{F}_q$, $q = p^r$, p prime, and $d \mid (q-1)$.