

The differential properties of certain permutation polynomials over finite fields

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Abstract

Finding functions, particularly permutations, with good differential properties has recently received a lot of attention due to their possible applications in cryptography and combinatorial design. We investigate the c -differential uniformity of some classes of permutation polynomials. As a result, we add four more classes of permutation polynomials to the family of functions that only contains a few (non-trivial) perfect c -nonlinear functions over finite fields of even characteristic. Moreover, we include a class of permutation polynomials with low c -differential uniformity over the field of characteristic 3.

Keywords: Finite fields, permutation polynomials, c -differential uniformity.