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Enumerating permutation polynomials over finite fields by degree. II. (English)

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Finite Fields Appl. 12, No. 1, 26-37 (2006).

Summary: This note is a continuation of Part I [Finite Fields Appl. 8, 548–553 (2002; Zbl 1029.11067)]. First we extend the method of the previous paper proving an asymptotic formula for the number of permutations for which the associated permutation polynomial has d coefficients in specified fixed positions equal to 0. This also applies to the function $N_{q,d}$ that counts the number of permutations for which the associated permutation polynomial has degree $< q-d-1$. Next we adopt a more precise approach to show that the asymptotic formula $N_{q,d} \sim q!/q^d$ holds for $d \leq \alpha q$ and $\alpha = 0.03983$.

MSC:

11T06 Polynomials over finite fields
05A16 Asymptotic enumeration
11T23 Exponential sums

Keywords:

Permutation polynomials; Finite fields; Exponential sums

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