

Palindromic polynomials over finite fields

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Abstract

Let \mathbb{F} be any finite field. A polynomial of degree n with coefficients in \mathbb{F} and with nonzero constant coefficient is called a palindrome, or a self-reciprocal, polynomial if its coefficients read the same backwards as forwards. We derive a formula for the number of monic polynomials of degree n over \mathbb{F} , with nonzero constant coefficient, that have no palindrome factors. This result was proved by one of the authors some time ago when $\mathbb{F} = \mathbb{F}_2$, the field of two elements. We recall how this was used to classify, up to conjugacy, Powers' binary shifts of commutant index 2 on the hyperfinite type II_1 factor.