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*Cyclotomic polinomials over finite fields*

Let $n$ be an odd natural number and let $p$ be an odd prime such that $p \nmid n$. Following the techniques of [1] and well known results about cyclotomic polynomials, we are able to show that the coefficients of the cyclotomic polynomial $\Phi_{np} \in \mathbb{Q}[t]$ can be computed as the unique solution of a linear system of equations $Tx = b$, where $T$ is a semicirculant matrix involving coefficientes of $\Phi_n$, and $b$ is a vector whose entries are certain coefficients of $\Phi_n$ determined according to some congruences modulo $p$.

In this talk we will study to what extent this characterization of cyclotomic polynomials over the rationals may be considered over a finite field and the potential implications of such a characterization.

[1] A. CAFURE Y E. CESARATTO. Irreducibility criteria for reciprocal polynomials and applications. Am. Math. Month. 124, No 1, 37–53.