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Computing the torsion points of a variety defined by lacunary polynomials

Louis Leroux

Universitè de Caen

In 2008, Filaseta, Granville and Schinzel described an algorithm for computing the cyclotomic factors of a polynomial $F(x) \in \mathbb{Z}[x]$. The complexity of this algorithm is polynomial in the logarithm of the degree of F, though exponential in its number of non zero terms. We will describe this algorithm and extend it for computing a representation of the torsion points (that is points whose coordinates are roots of unity) in the zero set of a system of polynomials equations. The complexity of this new algorithm is again polynomial in the logarithm of the degree of the input polynomials but exponential in their number of non zero terms and variables.
