

Seminari de Geometria Algebraica 2007/2008 (UB-UPC)

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A geometric approach for absolute bivariate polynomial factorization

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A geometric approach is presented and discussed for designing algorithms to factor a bivariate polynomial f over $\mathbb{C}[x, y]$. Let C be the curve in \mathbb{C}^2 associated to $f = 0$.

Using monodromy group action on a generic linear section E of C , one can determine the partition of E induced by the irreducible components of C . Then Hensel lifting are used to recover the factorization from this information. This general method can be used to derive factorization algorithms in the exact and also in the approximate setting. Then we will explain different strategies to speed up these algorithms.
