

BERNSTEIN–KOUCHNIRENKO THEOREM AND HODGE INEQUALITY FOR FIELDS

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Bernstein–Kushnerenko theorem computes the number of common roots in $(\mathbb{C}^*)^n$ of a generic system of n Laurent polynomials with given Newton polyhedra. Hodge inequality relates intersection and self-intersections of a couple of movable curves on a complete smooth algebraic surface. There are birationally invariant generalizations of these results (K. Kaveh & A.K.). It means that there are analogs of these theorems for fields of rational functions on some algebraic varieties.

I will presents new results of such kind for extensions F of an infinite ground field k by finitely many elements (k could be a field of positive characteristic and it could be not algebraically closed). All proofs are based on counting integral points and on convex geometry.