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Gastvortrag

Montag, 4. April 2016
13.15 Uhr
Seminarraum I

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Binary forms of given discriminant
and root distance of polynomials

Abstract:

Two binary forms (homogeneous polynomials in two variables) with integer coefficients F, G are called equivalent if there are integers a, b, c, d with $ad-bc=\pm 1$ such that $G=\pm F(aX+bY, cX+dY)$. Equivalent binary forms have the same discriminant. Classical work of Lagrange, Gauss and Hermite from the 19th century (quadratic and cubic forms) and much later Birch and Merriman from 1972 (binary forms of degree at least 4) implies that there are only finitely many equivalence classes of binary forms of given degree and discriminant. In 1991, Győry and the speaker gave an effective proof of this, which allows to determine the equivalence classes in principle. In the talk we would like to sketch a more recent proof of this, combining Hermite's reduction theory for binary forms with logarithmic forms estimates. As an application we deduce a non-trivial lower bound for the minimal distance of two roots of a polynomial.

Einladender: Clemens Fuchs