



Mathematisches Kolloquium

Am Freitag, dem 02. Juni 2017 spricht um 14 Uhr c. t. im Hörsaal IV
der Fachrichtung Mathematik (Gebäude E24)

Dr. Wouter Castryck

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über das Thema:

On the secondary error term in counting quartic extensions of $F_q[t]$.

Abstract: There is a folklore conjecture stating that for a fixed integer $d > 1$ the amount of number fields K such that $[K : \mathbb{Q}] = d$ and $|\text{Disc}(K)| < X$ equals $cX + o(X)$ for some constant $c > 0$. This is known up to $d \leq 5$, and in the cubic case it was moreover shown that there is a secondary term of the form $c'X^{5/6}$ for some other constant $c' > 0$. This was formerly known as the Roberts conjecture, now proven by Bhargava–Shankar–Tsimmerman and Taniguchi–Thorne. In the quartic case it is believed that there is a similar error term $c'X^{5/6}$ but this is open.

In his Ph.D. thesis Zhao demonstrated an analogue of the Roberts conjecture for cubic extensions of $F_q[t]$. His proof gives a remarkable explanation for the exponent $5/6$, which shows up as a corollary to a well-known bound on the Maroni invariants of a trigonal curve, in turn a consequence of the Riemann-Roch theorem. In this talk we will review Zhao's count, and give a similar derivation of the secondary term in the counting function for quartic extensions of $F_q[t]$, which now follows from bounds on Schreyer's tetragonal invariants b_1, b_2 . Currently our count is just a heuristic, ignoring a potentially tedious sieving step. This is joint work in progress with Yongqiang Zhao.

Der Gast wird von Prof. Dr. Frank-Olaf Schreyer betreut.

Alle Interessenten sind zum Vortrag herzlich eingeladen.

Kaffee und Tee ab 13.45 Uhr im Konferenzraum der Mathematik (Erdgeschoss, Raum 103)

Die Dozenten der Mathematik