Leibniz Universität Hannover

Oberseminar

zur

Algebra und Algebraischen Kombinatorik

David Geis

(Universität des Saarlandes)

"Some sequences of asymptotically good curves over the field F_{q^3}"

Let F_q be the field with q elements, let C_∞ denote the completed algebraic closure of $F_q((T^{-1}))$ and let N be a non-constant polynomial with coefficients in F_q. In the preprint "Towers of $GL(r)$-Type of Modular Curves" Ernst-Ulrich Gekeler constructs Galois covers $X^{(r,k)}(N)$ over $P^1(C_\infty)$ with Galois groups close to $GL(r, F_q[T]/(N))$ (for $r \geq 3$) and rationality and ramification properties similar to those of classical modular curves $X(n)$ over $P^1(Q)$. We consider the case $(r,k) = (3,2)$ and explain using the Riemann-Hurwitz genus formula how one can use Gekeler's results to obtain curves $Y(N)$ over the field F_{q^3} such that the ratio $R(N) := |\{F_{q^3}$-rational points of $Y(N)\}| \ / \ g(Y(N))$ is rather large. As application we obtain sequences of curves $Y(N_i)$ such that $2(q^2-1)/(q+2)$ is a lower bound for $\limsup_{i\to\infty} R(N_i)$.

Montag, 08.06.2015

ab 14:15 Uhr, Raum a410

Hauptgebäude der Leibniz Universität Hannover

Alle Interessierten sind herzlich eingeladen.

**Institut für Algebra, Zahlentheorie
und Diskrete Mathematik**