

Mini-Workshop

(organized by G. Wüstholz and Jing Yu)

Tuesday, February 17, 2009 in HG G19.2:

- 14.15 - 15.00: **Yifan Yang** (National Chiao Tung University)
Construction and application of a class of modular functions
- 15.15 - 16.00: **Clemens Fuchs** (ETH Zurich)
Integral points on certain algebraic varieties and a problem of Diophantus
- 16.00 - 16.30: ***** Coffee break *****
- 16.30 - 17.15: **Shu-Yen Pan** (National Tsing Hua University)
On local theta correspondance of supercuspidal representations

Wednesday, February 18, 2009 in HG G19.2:

- 14.15 - 15.00: **Chieh-Yu Chang** (National Tsing Hua University)
Algebraic independence of periods of the 3rd kinds for Drinfeld modules
- 15.15 - 16.00: **Richard Pink** (ETH Zurich)
The isogeny conjecture for A-motives
- 16.00 - 16.30: ***** Coffee break *****
- 16.30 - 17.15: **Jeng-Daw Yu** (National Taiwan University)
Ordinary crystals with logarithmic poles

Yifan Yang (National Chiao Tung University)

Title: *Construction and application of a class of modular functions*

Abstract: In this talk, we focus on a class of modular functions, known as the generalized Dedekind eta functions or the Siegel functions, and discuss several applications of these modular functions, including defining equations of modular curves, structure of the cuspidal rational torsion subgroup of the Jacobian $J_1(N)$, and the gonality of $X_1(N)$.

Clemens Fuchs (ETH Zurich)

Title: *Integral points on certain algebraic varieties and a problem of Diophantus*

Abstract: We present some results on integral points on certain subvarieties of $\mathbb{G}_a^k \times \mathbb{G}_m^n$. Since it is well known that such problems can be very difficult, we restrict to solutions that satisfy specific conditions on their heights. The concrete problem we have in mind is connected to old questions that go back to Diophantus of Alexandria.

Shu-Yen Pan (National Tsing Hua University)

Title: *On local theta correspondance of supercuspidal representations*

Abstract: The local theta correspondence asserts a one-to-one correspondence between certain irreducible admissible representations of two classical groups over a p -adic field. The preservation principle of local theta correspondence predicts the existence of a chain of irreducible supercuspidal representations of p -adic classical groups. In the talk, we want to investigate and describe these supercuspidal representations in certain circumstance.

Chieh-Yu Chang (National Tsing Hua University)

Title: *Algebraic independence of periods of the 3rd kinds for Drinfeld modules*

Abstract: In this talk, we will present motivic methods to determine the algebraic relations among periods of 3rd kinds, 2nd kinds, and 1st kinds for rank two Drinfeld modules. These are completely analogue of the conjectures for elliptic curves.

Richard Pink (ETH Zurich)

Title: *The isogeny conjecture for A -motives*

Abstract: We prove the isogeny conjecture for A -motives over finitely generated fields K of transcendence degree ≤ 1 . This conjecture says that for any semisimple A -motive M over K , there exist only finitely many isomorphism classes of A -motives M' over K for which there exists a separable isogeny $M' \rightarrow M$. This theorem is in precise analogy to known results for abelian varieties and for Drinfeld modules and will have strong consequences for the \mathfrak{B} -adic and adelic Galois representations associated to M .

Jeng-Daw Yu (National Taiwan University)

Title: *Ordinary crystals with logarithmic poles*

Abstract: We study the abstract formalism of ordinary crystals with logarithmic poles over a smooth affine base and give some properties which generalizes some of Katz's work in the 1960's.