Title and Abstract

Jaehyun Ahn (Chungnam Nat. Univ.)

Title: A DETERMINANT FORMULA FOR CONGRUENT ZETA FUNCTIONS OF ABELIAN FUNCTION FIELDS

Abstract: (Joint work with Hwanyup Jung)
we give a determinant formula for congruent zeta functions of abelian function fi elds. We also give some examples of congruent zeta functions when the conductor of abelian function field is prime.

Bruno Angles (Univ. Caen)

Title: On Goss problem concerning the derivative modulo p of certain Artin L functions

Abstract: We will consider a problem formulated by David Goss concerning the derivative modulo p of certain Artin L-functions associated to cyclotomic function fields in characteristic $p.$ We will give a positive answer for a weak version of this problem. Our approach will be similar to Iwasawa's construction of Kubota- Leopoldt p-adic L-functions.

Cécile Armana (Max-Planck-Institut)

Title: Coefficients and Hecke eigenvalues of Drinfeld modular forms

Abstract: Drinfeld modular forms are analogs over the function field $\mathbf{F}_{q}(T)$ of classical modular forms. Unlike the classical situation, the action of Hecke operators on the analytical expansion of such modular forms is not well understood. In this talk, I will present formulas giving certain coefficients in terms of Hecke eigenvalues, and vice versa, and discuss some applications. The main tool for the proof is an estimate for power sums of coefficients of the Carlitz module.

Andreas Bender (POSTECH)

Title : On a Goldbach-type question in F_q[t]

Abstract : The Goldbach conjecture asserts that every even integer greater than two is the sum of two primes. An analogous conjecture can be formulated in the ring of monic polynomials in one variable over a finite field. This talk is about an approach to this conjecture involving prime values of polynomials and a tool which is available only in the polynomial case. The techniques involve some explicit geometry of plane curves over finite fields and an interplay with the corresponding function field extensions, including the Cebotarev density

theorem.

SoYoung Choi (Dongguk Univ.)

Title: A basis for the space of weakly holomorphic Drinfeld modular forms

Abstract: We construct a natural basis for the space of weakly holomorphic Drinfeld modular forms and observe some arithmetic properties of coefficients of the basis elements.

In precise we find that the basis elements satisfy a generating function and find the duality between coefficients of the basis elements. Moreover we obtain congruence properties of t-expansion coefficients of these functions.

Ernst Urlich Gekeler (Saarlandes Univ.)

Title: Eulerian and Goss polynomials

Abstract:

Ick sun Eum (KAIST)

Title : Representations of integers by

$x_1^2+2x_2^2+x_3^2+x_4^2+x_1x_3+x_1x_4+x_2x_4$

Abstract:: Let $r_Q(n)$ be the representation number of a nonnegative integer n by the quaternary quadratic form

$Q=x_1^2+2x_2^2+x_3^2+x_4^2+x_1x_3+x_1x_4+x_2x_4$. We prove the identity $r_Q(1)r_Q(p^2n)=r_Q(p^2)r_Q(n)$ for any prime p different from 13 and any positive integer n prime to p. And, we explicitly determine $r_Q(n^2)$ for any integer n, too.

Su Hu (KAIST)

Title: On *p*-adic Hurwitz-type Euler zeta functions

Abstract:: The definition for the p-adic Hurwitz-type Euler zeta functions has been given by using the fermionic p-adic integral on Zp. By computing the values of this kind of p-adic zeta function at negative integers, we show that it inter-polates the Euler polynomials p-adically. Many properties are provided for the p-adic Hurwitz-type Euler zeta functions, including the convergent Laurent series expansion, the distribution formula, the functional equation, the re리ection formula, the derivative formula, the p-adic Raabe formula and so on. The definition for the p-adic Euler L-functions has also been given by using the p-adic Hurwitz-type Euler zeta functions. These is a joint work with Min-Soo Kim

Daeyeol Jeon (Kongju Nat. Univ.)

Title: Classification of bielliptic modular curves

Abstract: An algebraic curve X is called {\it bielliptic} if it admits a map from X to an elliptic curve E of degree 2. In this talk, we present a classification of bielliptic certain modular curves.

Sangtae Jeong (Inha Univ.)

Title : Fermat quotient operators and locally analytic functions

Abstract : Recently, Buium et al. characterize locally analytic functions on $\Z_p$ in terms of a restricted power series over $\Z_p$ in finitely many iterates of the Fermat quotient operator. In this talk we establish the function field analogue of their result: Let $R:=\F[[\p]]$ be the ring of formal power series in one variable $\p$ over a finite field $\F$ of size q and $\d: R \rightarrow R$ be the Fermat quotient operator defined by $\d x = {(x-x^q)}/{\p}.$ Then we prove that a function $f: R \rightarrow R$ is locally analytic of order m if and only if there exists an integer $m \geq0$ so that $f(x)=F(x, \d x, \cdots, \d^m x),$ where F is a restricted power series in $R[[x_0, \cdots, x_m]].$ In addition, we deduce Wagner's result for continuous functions on completions of $\F_r[T].$

HwanYup Jung (Chungbuk Nat. Univ.)

Title: Average values of L-functions in function fields

Abstract:: Gauss made two famous conjectures about average values of class numbers of orders in quadratic number fields, which were proven by Lipschitz and Siegel. In quadratic function field cases, such average values formulas were obtained by Hoffstein and Rosen in odd characteristic and Chen in even characteristic. Rosen also obtained such a formula in (cubic) Kummer extension case. In this talk, we will introduce our recent result about average values of class numbers of orders in (cubic) Artin-Schreier extensions. We also will talk about average values of Dirichlet L-series with prime conductors in function field case.

Soon-Yi Kang (KAIST)

Title: Mock theta functions via Ramanujan's reciprocity theorem

Abstract:: In earlier work, we showed that two mock Jacobi forms add to a Jacobi theta function using Ramanujan's three variable reciprocity theorem. In this talk, we revisit the reciprocity theorems to study its further relation with mock theta functions.

Changheon Kim (Hanyang Univ.)

Title: Basis for the space of weakly holomorphic modular forms in higher level cases and its application

Abstract: (joint work with Soyoung Choi) Let $\Gamma_0^+(p)$ be the group generated by the Hecke group $\Gamma_0(p)$ and the Fricke involution W_p. In this talk I will construct a canonical basis for the space of weakly holomorphic modular forms of integral weight for $\Gamma_0^+(p)$ and investigate its properties and applications

Daeyeol Kim (NIMS)

Title: Odd divisor functions formula derived from Weierstrass p-function.

Abstract: In this talk, I will explain basic properties of hypergeometric series and elliptic functions.
And then we shall prove new convolution relations for divisor functions derived from Weierstrass p-functions and basic hypergeometric series.

Min-soo Kim (KAIST)

Title: A p-adic view of multiple power sums

Abstract:: Washington [p-adic L-functions and sums of powers, J. Number Theory 69 (1998), 50--61] gave an explicit p-adic expansion of the harmonic series as a p-adic power series. The coefficients are values of p-adic L-functions.
In this talk, we gave an explicit p-adic expansion of the multiple harmonic series as a p-adic power series. The coefficients are values of multiple two-variable p-adic L-functions. Washington's formula is a special case of the formula given in this talk. These are joint work with Su Hu.

Satoshi Kondo (IPMU)

Title: Boundary maps to the supersingular points and the evaluation of Drinfeld modular Beilinson-Kato type elements

Abstract: We consider an analogue of Beilinson-Kato type elements in the K-theory of the moduli of Drinfeld modular varieties. We compute the value at supersingular points via successive boundary maps (in the localization sequences obtained from the strata). This is a Drinfeld modular analogue of one of first steps in the proof by Beilinson as presented by Schappacher and Scholl of integrality of Beilinson elements.
By restricting to Beilinson-Kato type elements (and not considering all of the Beilinson type elements),
we prove a similar statement by explicit computation, which then generalizes to

higher dimensions.

Joonho Lee (Seoul Nat. Univ.)

Title: Note on the relation between prime generating polynomials and class number one problem for some number fields

Abstract:: It has been known for a long time that there exists the close connection between prime generating polynomials and class number one problem for some number fields. In this talk, we explain about known results for quadratic number fields and introduce some results and problems related to this topic for cubic fields.

Yoonjin Lee (Ewha Women's Univ.)

Title: Newton polygons of exponential functions attached to Drinfeld modules of rank 2

Abstract: Let $\\phi$ be a Drinfeld A-module of rank 2 defined over $C_\\infty$. We discuss explicit determination of the Newton polygons of exponential functions attached to $\\phi$ and the successive minima of the lattice associated to $\\phi$ by uniformization. When $\\phi$ is defined over $K_\\infty$, we give a refinement of Gardeyn\'s bounds for the action of wild inertia on the torsion points of $\\phi$, as well as a criterion for the lattice field to be unramified over $K_\\infty$.

Yan Li (Beijing Agriculture University)

Title: Gauss sums over some matrix groups and their applications

Abstract: In this talk, we give explicit expressions of Gauss sums for general (resp. special) linear groups over nite elds, which involve classical Gauss sums (resp. Kloosterman sums). The key ingredient is averaging such sums over Borel subgroups, i.e, the subgroup of upper triangular matrices. Furthermore, we give the following three applications:

(1) the number of invertible matrices of zero-trace over nite elds has been counted.

(2) two bounds by Ferguson, Homan, Luca, Ostafe and Shparlinski in [Some additive combinatorics problems in matrix rings, Rev. Mat. Complut. (23) 2010, 501{513] have been largely improved.

(3) several uniformly distributed results in matrix groups have been presented. Finally, if the time is enough, I will also explain the applications of Gauss sums over some matrix groups in coding and cryptography which connect to Dae San

Kim's recent work in [D. S. Kim, Codes associated with special linear groups and power moments of multi-dimensional Kloosterman sums, Ann. Mat. Pura Appl. (4) 190 (2011), 61{76]. These are joint work with Su Hu.

Andreas Schweizer (Academia Sinica, Taiwan)

Title: Entire functions sharing simple a-points with their first derivative

Abstract: Let f be an entire function in the complex plane. A famous theorem by Mues and Steinmetz says that if for two complex numbers a_{1} and a_{2} the function f and its derivative f^{'} take the value a_i at exactly the same points of the complex plane, then $f \equiv f^{'}$, that is f(z) = Ce^{z}. We discuss what happens if we only know that the points where f respectively f^{'} takes the value ai with multiplicity one are exactly the same. The proof also uses function eld arguments.

Hae-Sang Sun (Chungbuk Nat. Univ.)

Title: A class of algebraic differential equation that the Iwasawa power series does not satisfy

Abstract: A class of algebraic differential equation that the Iwasawa power series does not satisfy
Abstract:Due to universality theorem, Dirichlet L-function does not satisfy any non-trivial algebraic differential equations. In the talk, we establish the conjectural analogue for the Iwasawa power series and present a class of algebraic differential equations that the Iwasawa power series does not satisfy.

Yuichiro Taguchi (Kyushu University)

Title: On v-adic periods of t-motives (after Mishiba)

Abstract: I will give an exposition of Mishiba's results on the equality between the transcendental degree of the field generated by the v-adic periods of a t-motive M and the dimension of the Tannakian Galois group for M,where v is a "finite" place of the rational function field over a finite field. As an application, the algebraic independence of "formal" polylogarithms can be proved.

Dinesh Thakur (Univ. Arizona)

Title: Diophantine Approximation in function fields

Abstract: While Roth's famous theorem says that Diophantine approximation exponent for algebraic numbers is 2, the corresponding situation in function fields is not even conjecturally understood. We will describe the recent advances

in understanding these issues.

Fu-Tsun Wei (National Tsinghua U)

Title: On metaplectic forms over function fields and an analogue of Waldspurger's formula

Abstract:: In this talk, I present a concept of half integral weight in the function field context. I also introduce a Shimura-type map from the space of weight 2 automorphic forms to the space of weight 3/2 metaplectic forms. From the central critical value formula of Rankin-type L-series attached to weight 2 newforms, these special values are essentially Fourier coefficients of corresponding weight 3/2 forms. This is a function field analogue of Waldspurger's formula

Jaehyun Yang (Inha Univ.)

Title : Maass-Jacobi Forms

Abstract : In this talk, I introduce the notion of Maass-Jacobi forms and study some properties of Maass-Jacobi forms. I also deal with invariant differential operators on Siegel-Jacobi space and present some important problems. I mention some results of Kathrin Bringmann and her colleagues about Maass-Jacobi forms.

Jing Yu (National Taiwan University)

Title: On t-modules

Abstract: I will give a survey on t-modules, and the associated t-motives. Discuss the periods of t-modules, and the related transcendence theory. We shall also compare t-modules with elliptic sheaves.

Qin Yue (Nanjing University of Aeronautics and Astronautics))
Title: **Hilbert genus fields of real biquadratic fields**

Abstract: Let $K = Q(\sqrt{p}, \sqrt{d})$ be a real biquadratic field with p ≡ 1mod 4 or p = 2, and d a squarefree positive integer. The Hilbert genus field is described explicitly by Yue (Ramanujan J. 21:17-25, 2010) in the case that p ≡ 1 mod 4 and d ≡ 3 mod 4. In this article, we give the Hilbert genus field of K explicitly for the remaining cases. We also consider the function field analogue of this problem.

Poster Session

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Junesang Choi (Dongguk Univ.)

Title: Recent Developments on Multiple Gamma Functions

Abstract: The multiple Gamma functions Γ_n were defined and studied systematically by Barnes and by others in about 1900. Two decades ago, these functions were revived in the study of the determinants of the Laplacians on the n-dimensional unit sphere ${\bf S}^n$ and have been investigated in various other ways.

There is a remarkably abundant literature on inequalities for the classical Gamma function Γ and its such related functions as, for example, the Psi (or Digamma) function. On the other hand, there are only a few very recent papers on inequalities for the double Gamma function $\Gamma_2:=1/G$. Here, in this talk, we aim at presenting certain inequalities for the multiple Gamma functions Γ_n for (especially) $n=2,\,3,\,4,\,5$. We employ and extend the method initiated by Batir and Cancan and express $\log \Gamma_n (1+x)$ as series involving the Zeta functions. We also derive a more convenient and potentially useful explicit form of the multiple Gamma functions Γ_n $(n \in \mathbb{N})$.

Dae Ho Jin (Dongguk Univ.)

Title: The curvatures of lightlike submanifolds of an indefinite Kenmotsu manifold

Abstract: In the classical theory of Kenmotsu manifolds, the following result is well-known: If a Kenmotsu manifold is locally symmetric, then it is of constant negative curvature -1. In this paper, we study the forms of curvatures of lightlike submanifolds M of an indefinite Kenmotsu manifold $\bar{M}$ subject to the conditions: (1) M is locally symmetric, or (2) M satisfies the Nomizu's condition, i.e., the curvature tensor R of M satisfies $R(X, Y)R = 0$ on TM. We prove the following two results: $\bullet$ If the structure vector field of $\bar{M}$ is tangent to M, then M is a space of constant negative curvature -1. $\bullet$ If the transversal vector bundle $tr(TM)$ of M is parallel on $T\bar{M}$ and M is irrotational, then M is a space of constant curvature 0.

Jong Moon Shin (Dongguk Univ.)

Title: Semicentral idempotents in semigroups

Abstract: An idempotent e of a ring R is said to be left (right) semicentral if $xe = exe\,, (ex = exe)$ for every $x\,\in R$. This notion can be found in [1]. In [1] and related papers, authors determined some properties of semicentral idempotents in some rings. In this paper, we introduce the concept of semicentral idempotent of a semigroup, and discuss some properties of semicentral idempotents in regular and completely regular semigroups. For undefined terms used in this paper, we referred to [2].