Workshop on p-adic L-functions and algebraic cycles

Date	September 11 (Mon) – 15 (Fri), 2017
Place	National Taiwan University, Astro-Math building, Taipei, Taiwan Room 202
Organizer	Ming-Lun Hsieh (Academia Sinica)

This conference is supported by National Center for Theoretic Sciences.

Program

September 11 (Mon)

10:30 – 11:00 Registration/Opening

11:00 – 12:00 Tadashi Ochiai (Osaka University)
Iwasawa Main Conjecture for nearly ordinary deformations of higher rank

12:00 – 14:30 Lunch

14:30 – 15:30 Kazim Buyukboduk (Koc Istanbul and Dublin)
On the non-ordinary Iwasawa theory of modular forms over imaginary quadratic fields (1)

15:30 – 16:00 Tea time

16:00 – 17:00 Kazim Buyukboduk (Koc Istanbul and Dublin)
On the non-ordinary Iwasawa theory of modular forms over imaginary quadratic fields (2)

September 12 (Tue)

9:30 – 10:30 Hae-Sang Sun (Ulsan National Institute of Science and Technology)
Distribution of modular symbols

10:30 – 11:00 Tea time

11:00 – 12:00 Ignazio Longhi (Xi'an Jiaotong-Liverpool University)
Closed subsets of the finite adeles: measures and densities

12:00 – 14:30 Lunch

14:30 – 15:30 Fabian Januszewski (Karlsruhe Insitute of Technology)
Non-abelian p-adic L-functions and non-vanishing of central L-values

15:30 – 16:00 Tea time

16:00 – 17:00 Kazuto Ota(Keio University)
On the Mazur-Tate refined conjecture for modular forms

September 13 (Wed)

9:30 – 10:30 Takamichi Sano (Osaka City University)
Generalized Stark elements and p-adic L-functions

11:00 – 12:00 Fu-Tsun Wei (National Central University)
Kronecker limit formula of mirabolic Eisenstein series over function fields

September 14 (Thu)

9:30 – 10:30 Yao Cheng (National Taiwan University)
Algebraicity of certain automorphic representations of $\mathrm{GL}(3) \times \mathrm{GL}(2)$

10:30 – 11:00 Tea time

11:00 – 12:00 Chan-Ho Kim (KIAS)
On the Iwasawa main conjecture for modular forms

12:00 – 14:30 Lunch

14:30 – 15:30 Matteo Longo (University of Padova)
Anticyclotomic Iwasawa Main Conjectures for elliptic curves (1)

15:30 – 16:00 Tea time

16:00 – 17:00 Matteo Longo (University of Padova)
Anticyclotomic Iwasawa Main Conjectures for elliptic curves (2)

18:30 – 20:30 Dinner at Shinyeh

September 15 (Fri)

9:30 – 10:30 Masataka Chida (Tohoku University)
Chow-Heegner cycles on products of CM elliptic curves

10:30 – 11:00 Tea time

11:00 – 12:00 Shinichi Kobayashi (Kyushu University)
Iwasawa theory for generalized Heegner cycles at non-ordinary primes

Title and abstract

Speaker: Kazim Buyukboduk (Koc Istanbul and Dublin)
Title: On the non-ordinary Iwasawa theory of elliptic modular forms over imaginary quadratic fields
Abstract: We will report on our joint work with A. Lei on the p-non-ordinary Iwasawa theory of elliptic modular forms over imaginary quadratic fields. We intend to provide technical details that we dwell on; in particular, we will explain how the interpolation formulae for Beilinson-Flach classes imply a signed-splitting for them, giving rise to a non-trivial Euler system. We will also explain our proof of a functional equation for Loeffler's *three*-variable p-adic L-function in this context, which is crucial for applications to indefinite anticyclotomic theory.

Speaker: Yao Cheng (National Taiwan University)
Title: Algebraicity of certain automorphic representations of $\mathrm{GL}(3) \times \mathrm{GL}(2)$
Abstract: We will present an explicit central value formula for the triple product L-functions over number fields and we use this formula to study the positivity and algebraicity of central values for triple product L-functions.

Speaker: Masataka Chida (Tohoku University)
Title: Chow-Heegner cycles on products of CM elliptic curves
Abstract: Bertolini-Darmon-Prasanna introduced a construction of rational points on CM elliptic curves from generalized Heegner cycles assuming Tate conjecture for (generalized) Kuga-Sato varieties. In this talk, we will extend their construction to the case of self-products of CM elliptic curves. Moreover we will explain a relation between the p-adic Abel-Jacobi image of the cycles and the special values of (p-adic) L-functions generalizing their works.

Speaker: Fabian Januszewski (Karlsruhe Insitute of Technology)
Title: Non-abelian p-adic L-functions and non-vanishing of central L-values
Abstract:I will report on recent progress on the construction of p-adic L-functions for Hida families on GL(n) and consequences for non-vanishing of twisted central L-values.

Speaker: Kazuto Ota(Keio University)
Title: On the Mazur-Tate refined conjecture for modular forms
Abstract: We explain some recent progress regarding the Mazur-Tate conjecture for modular forms. More concretely, we discuss the rank part of the conjecture, which relates the order of zeros of Mazur-Tate elements with the rank of Selmer groups.

Speaker: Shinichi Kobayashi (Kyushu University)
Title: Iwasawa theory for generalized Heegner cycles at non-ordinary primes
Abstract:TBA

Speaker: Matteo Longo (University of Padova)
Title: Anticyclotomic Iwasawa Main Conjectures for elliptic curves
Abstract: Let E be an elliptic curve defined over the field of rational numbers, p a prime number, and K an imaginary quadratic field, of discriminant prime to the conductor of E, in which p is not ramified. Let K_∞ be the anticyclotomic $\mathbf{Z}_p$-extension of K. The anticyclotomic main conjecture relates, under suitable arithmetic conditions, a p-adic L-function (which is a p-adic anlytic object, related to the complex L-function of E twisted by anticylclotomic characters) and the structure of the Selmer group of E over K_∞ (viewed as a module over the Iwasawa algebra of K_∞/K). The formulation of the main conjecture depends on some arithmetic data: the behavior of p in K (split or inert) and the reduction type of E at p (good ordinary or supersingular). In a joint work, in progress, with M. Bertolini and R. Venerucci, for each of these situations we state and prove the corresponding version of the anticyclotomic Iwasawa main conjecture. I will try to explain some of the ideas underlying the proofs of these results.

Speaker: Tadashi Ochiai (Osaka University)
Title: Iwasawa Main Conjecture for nearly ordinary deformations of higher rank
Abstract:We explain about an approach via Euler system to attack the Iwasawa Main Conjecture for Galois deformations of higher rank defined over deformation rings of several variables. Especially, we state our results on Euler system bound for restricted Euler systems and Coleman map interpolating dual exponential maps and logarithm maps of Bloch Kato for higher rank Galois deformations. If time permits, we give an application of our results to Beilinson-Flach elements for rank for Galois deformations given by a tensor product of two different Hida families. This is a joint work with Kazim Buyukboduk.

Speaker: Hae-Sang Sun (Ulsan National Institute of Science and Technology)
Title: Distribution of modular symbols
Abstract: Modular symbol is one of major tools to study non-vanishing of modular L-values with Dirichlet twists. Mazur-Rubin established a conjecture on statistics on the distribution of modular symbols. Regarding the modular symbol as a random variable for the set of rational numbers with a fixed denominator, they conjectured that it is asymptotically normal as the denominator goes to infinity. In the talk, I will discuss the mean and variance of the modular symbols. This is a research in progress.

Speaker: Takamichi Sano (Osaka City University)
Title: Generalized Stark elements and p-adic L-functions
Abstract: I will talk about ongoing joint work with David Burns. In this talk, I will discuss special values of p-adic L-functions (of Deligne-Ribet) in terms of generalized Stark elements, which were recently introduced by Burns, Kurihara and the speaker. In particular, I will study the p-adic Beilinson conjecture for number fields, formulated by Besser-Buckingham-de Jeu- Roblot, and a generalization of the Coleman-Ihara formula.

Speaker: Chan-Ho Kim (KIAS)
Title: On the Iwasawa main conjecture for modular forms
Abstract: We provide a simple numerical criterion to verify the Iwasawa main conjecture for all members of a Hida family once and for all under mild assumptions. Explicit examples will be given. This is joint work with Myoungil Kim and Hae-Sang Sun.

Speaker: Ignazio Longhi (Xi'an Jiaotong-Liverpool University)
Title: Closed subsets of the finite adeles: measures and densities
Abstract: A natural way of thinking of L-functions is to consider them as measures on adelic groups. One can try to consider in this way also some classical topics in analytic number theory, such as questions related to the amount of prime numbers, which can be approached by means of analytic and topological ideas. For example, one can prove that there are infinitely many primes using either analytic tools (the zeta function) or topology (taking the profinite completion of the integers). Similarly, one can look for a topological version of Dirichlets theorem that there are infinitely many primes in arithmetic progressions.

Speaker: Fu-Tsun Wei (National Central University)
Title: Kronecker limit formula of mirabolic Eisenstein series over function fields.
Abstract: Mirabolic Eisenstein series plays an important role in the study of L-functions coming from automorphic representations. In this talk, I will establish an analogue of the Kronecker limit formula for the mirabolic Eisenstein series on GL(n), which connects the first derivative of these series with Drinfeld-Siegel units. One application is to derive a Colmez-type formula of CM Drinfeld modules, which expresses the Taguchi height of CM Drinfeld modules in terms of the logarithmic derivative of the corresponding zeta functions. From the integral representation of the Rankin-Selberg L-functions and Godement-Jacquet L-functions associated to cuspidal representations over function fields, we obtain two formulas of their special values in the end.