

7th Kyoto conference on automorphic forms    Program and abstracts

Date: June 19 – June 21, 2020

Location: None (zoom lectures only)

This conference is partially supported by the grant: Grant-in-Aid (C) (20K03512).

June 19, 13:00-14:00 Atobe, Hiraku (Hokkaido University)

Title: On Jantzen's algorithm to compute derivatives

Abstract: The derivative of representations of  $p$ -adic classical groups is defined by an iterated composition of partial Jacquet functors. It has many applications, for example, the irreducibility of several parabolically induced representations. In 2018, Jantzen suggested an algorithm to compute the highest derivative of any irreducible representation, but there was a problem left. In this talk, we solve this problem and complete Jantzen's algorithm.

14:10-15:10 Ochiai, Tadashi (Osaka University)

Title: Congruence of automorphic representations and Special values of adjoint L-functions for  $GSp(4)$

Abstract: In this talk, we present of a joint work with Francesco Lemma. We start from the prototype of our joint work by Hida. Hida related the existence of a mod  $p$  congruence between two elliptic normalized eigen cuspforms  $f$  and  $g$  of the same weight and level to the special value at 1 of the adjoint L-function of the form  $f$ . In our joint work, we extended this result and we studied similar congruences between a fixed endoscopic cuspidal automorphic representation of  $GSp(4)$  and non-endoscopic cuspidal automorphic representations modulo the value at 1 of the adjoint L-function normalized by a suitable period. We give the detail of the statement of our result and give a brief sketch of the proof.

15:20-16:20 Ikeda, Tamotsu (Kyoto University)

Title: On the Gross-Keating invariant of a hermitian form

Abstract: The Fourier coefficient of an Hermite-Eisenstein series is expressed by Siegel series of a hermitian form. It is expected that the Siegel series of a hermitian form is determined by invariant related to Gross-Keating invariant. In this talk, we give some construction of Gross-Keating invariant and its variants of a hermitian form over a  $p$ -adic field.

16:30-17:30 Wakatsuki, Satoshi (Kanazawa University)

Title: Zeta functions and nonvanishing theorems for toric periods on  $GL_2$

Abstract: In this talk, we study zeta functions with toric periods on inner forms of  $GL_2$ , which were introduced by Fumihiro Sato for a special case, and concerned with the prehomogeneous vector spaces of pairs of quaternion algebras. Furthermore, we use the zeta functions to prove nonvanishing theorems for toric periods. This is a joint work with Miyu Suzuki.

19:00-21:00 Reception (zoom)

June 20, 10:00-11:00 Kogiso, Takeyoshi (Josai Universty)

Title:  $q$ -Deformation of continued fractions, its application and further generalization.

Abstract:  $q$ -Deformation of continued fractions was introduced by Lee and Scchiffler for the purpose of a recipe of determining Jones polynomials of rational links and it was excelently modified by Morier-Genoud and Ovsienko so that it could be applied to other fields. In this talk, I introduce a certain application of this to solutions of Markov equation and quadratic irrational numbers. If time permit, I introduce further generalization of them to cluster variable-version.

11:10-12:10 Sugiyama, Shingo (Nihon University)

Title: Resolvent trace formulas and optimal estimates of the Kronecker-Hurwitz class numbers

Abstract: A Hecke operator on elliptic modular forms has been studied. Especially, it is known that its trace has two different expressions, which lead us the Eichler-Selberg trace formula. The Eichler-Selberg trace formula has some applications to dimension formulas, equidistributions of Hecke eigenvalues, relations among the Kronecker-Hurwitz class numbers. In this talk, we establish a resolvent trace formula, which is concerned with the trace of the resolvent of a Hecke operator on elliptic cusp forms. We also give an application of the resolvent trace formula to optimal estimates of an average of the Kronecker-Hurwitz class numbers. This is a joint work with Masao Tsuzuki (Sophia University).

13:30-14:30 Narita, Hiroaki (Waseda University)

Title: Fourier-Jacobi expansion of generic cusp forms on  $Sp(2; \mathbb{R})$

Abstract: The aim of this talk is to provide a theory of the Fourier-Jacobi expansion for cusp forms on  $Sp(2; \mathbb{R})$  generating an irreducible admissible representation admitting a Whittaker model, namely generic cusp forms. To establish such theory, we use the spectral theory of the Jacobi group by Berndt-Boecherer and Berndt-Schmidt. This Fourier-Jacobi expansion has some contribution by Jacobi Eisenstein series (or Jacobi Poincare series) with the test function given by the Whittaker function (this

part is a correction to my talk at RIMS workshop in January). The idea to use this spectral theory yields a representation theoretic generalization of the Eichler-Zagier correspondence, which is an isomorphism between the spaces of Jacobi cusp forms and elliptic cusp forms of half-integral weight. Combining our theory with explicit formulas for the Whittaker functions and the Fourier-Jacobi type spherical functions by Oda, Miyazaki-Oda and Hirano et al., explicit descriptions of the Fourier-Jacobi expansions are available.

June 21, 10:00-11:00 Miyazaki, Takuya (Keio University)

Title: Siegel paramodular forms corresponding to skew-holomorphic Jacobi cusp forms

Abstract: We extend Gritsenko's argument in suitable way to construct a lift of skew-holomorphic Jacobi cusp forms to Siegel paramodular forms.

11:10-12:10 Horinaga Shuji (Tokyo University of Science)

Title: On the algebraicity of critical values of standard  $L$ -functions attached to vector valued Siegel modular forms

Abstract: In 90's, Shimura proved the algebraicity of critical values of standard  $L$ -functions attached to scalar valued Siegel modular forms. Then the holomorphic projection operator played the crucial role. Pitale, Saha and Schmidt prove the similar result for vector valued Siegel modular forms of degree 2 by constructing the other kind of projection operator. In this talk, we show that the algebraicity for vector valued Siegel modular forms of degree  $n$  with large weight by constructing the certain projection operator via the infinitesimal characters under several assumptions.