

6th Kyoto conference on automorphic forms Program and abstracts

Date: June 21 – June 23, 2019

Location: Kyoto University, Graduate School of Science Bldg No.3 Rm 110 (See <https://www.kyoto-u.ac.jp/en/access/north-campus-map.html>)

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June 21, 13:00 – 14:00 Yukie, Akihiko (Kyoto University)

Title: On the density theorem related to the space of non-split tri-Hermitian forms

Abstract: Let k be a fixed cubic field which is unramified at 3. For a quadratic field F , let $L = F \cdot k$. In this talk we discuss the density of $h_L R_L / h_F R_F$ (the relative hR). If k is non-normal, we proved that $\sum_{0 < |\Delta_F| < X} h_L R_L / h_F R_F$ is asymptotically CX^2 where C is a constant expressed as an Euler product. If k is cyclic, we still have a density theorem with an additional factor related to the global-local behavior of the torus $\text{Ker}(L^\times \rightarrow F^\times)$.

14:10 – 15:10 Noguchi, Hiroshi (Kyoto University)

Title: On genuine characters of the metaplectic group of $\text{SL}_2(\mathbb{Z}_p)$ and the transformation formula of the Dedekind eta function.

Abstract: Let $M(\mathbb{Z}_p)$ be the metaplectic group of $\text{SL}_2(\mathbb{Z}_p)$, which is a double covering of $\text{SL}_2(\mathbb{Z}_p)$. The character ϕ of $M(\mathbb{Z}_p)$ is genuine if $\phi([I_2, -1]) = -1$, where I_2 is a unit matrix of $\text{SL}_2(\mathbb{Z}_p)$. We find the genuine characters of $M(\mathbb{Z}_p)$ by means of the Weil representation. For a prime $p \geq 3$, the double cover $M(\mathbb{Z}_p) \rightarrow \text{SL}_2(\mathbb{Z}_p)$ has a splitting. A map ρ_p associated with the splitting leads to one of genuine characters of $M(\mathbb{Z}_p)$. If $p \geq 5$, the character is the only genuine character of $M(\mathbb{Z}_p)$. Moreover we prove the transformation formula of the Dedekind eta function with respect to modular transformation by the genuine characters of $M(\mathbb{Z}_p)$. For the adèle ring \mathbb{A} of \mathbb{Q} , let Φ be a lifting of the Dedekind eta function $\eta(z)$ to $M(\mathbb{A})$, which is the metaplectic group of $\text{SL}_2(\mathbb{A})$. We calculate the transformation formula of the function Φ by the said genuine characters and then we prove the transformation formula of $\eta(z)$.

15:20 – 16:20 Ito, Nozomi

Title: On Miyawaki lifts for unitary groups of small degree

Abstract: Miyawaki lifts are liftings constructed by using the pullbacks of Ikeda lifts. They have been studied intensively in recent years, but their properties, especially non-vanishing, have not been sufficiently understood. In this talk, we study Miyawaki lifts of automorphic characters of $\text{U}(1)$ with respect to Hermitian Maass lifts, which is Ikeda lifts of $\text{U}(2, 2)$.

15:20 – 16:20 Ishimoto, Hiroshi

Title: Local intertwining relation for metaplectic groups

Abstract: Gan and Savin established the local Langlands correspondence for metaplectic groups. They transferred the local Langlands correspondence for odd special orthogonal groups, via the theta correspondence. We can also transfer the local intertwining relation by applying the the mixed model, which was introduced by Gan and Ichino, to our case.

June 22, 9:30 – 10:30 Yamana, Shunsuke

Title: On exceptional zeros of p -adic L -functions

Abstract: p -adic L -functions involve modified p -factors which measure the discrepancy between the p -adic and classical special values in the interpolation formula. It is a puzzling fact that this factor can vanish at the central point. Then the p -adic L -function trivially vanish at the point, and such a zero is called an exceptional zero. The p -adic L -function of an elliptic curve E has an exceptional zero if and only if E has split multiplicative reduction at p . The precise relation between derivative of the p -adic L -function and the algebraic part of the central value was conjectured by Mazur-Tate-Teitelbaum and proved by Greenberg-Stevens.

In this talk I will determine the exceptional zeros of cyclotomic p -adic L -functions associated to three ordinary elliptic curves and prove an identity between double or triple derivatives of the p -adic L -function and central L -values. This is a joint work with Ming-Lun Hsieh.

10:40 –11:40 Tsuzuki, Masao

Title: Explicit trace formula on $GL(3)$

Abstract: Starting with the Arthur's invariant trace formula of $GL(3)$ applied to a test function whose non-archimedean component is the characteristic function of the maximal compact subgroup, we calculate the Fourier transforms of the invariant distributions appearing in the trace formula.

We will see what kind of special functions is necessary for the description of the trace formula, and will give an application of our formula to a problem in the spectral geometry of a 5 dimensional arithmetic manifold.

Afternoon is for free discussion

June 23, 9:30 – 10:30 Gejima, Kohta

Title: An average of special values of Rankin–Selberg L -series.

Abstract: For an integer n and a Dirichlet character ξ modulo N , we denote by $\mathcal{S}_n(N, \xi)$ the space of cusp forms of weight n with respect to $\Gamma_0(N)$ and nebentypus ξ . Here $\Gamma_0(N)$ is the Hecke congruence subgroup. Let k, l be nonnegative integers with $k - l \geq 2$ and χ, ψ Dirichlet characters modulo N . For a fixed $g \in \mathcal{S}_l(N, \psi)$, we give an explicit expression for the average of special values of the Rankin–Selberg

L -series $D(s, f \otimes g)$ at each $s = m \in \mathbb{Z}$ with $\frac{k+l}{2} - 1 < m < k$ as f ranges over an orthogonal basis of $\mathcal{S}_k(N, \chi)$.

10:40 – 11:40 Tajima, Kazuaki

Title: On the GIT stratification of prehomogeneous vector spaces

Abstract: We have established a combinatorial method to determine a stratification (GIT stratification) based on geometric invariant theory. We applied this method to certain prehomogeneous vector spaces using computer computations and determined their GIT stratifications. The result has been known if the ground field is \mathbb{C} . This method enables us to determine the stratification rationally over any perfect field. This is joint work with Akihiko Yukie.