

Research Report of JSPS-ITP

(The international sending-elevating project for young mathematicians based on singularity, topology and mathematical analysis: Hokudai model)

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Research Report: I have stayed at the Institut Fourier, Université Grenoble I in France for a three-months-period. There I discussed mainly with Professor Alexei Pantchichkine, Franchesco Chiera and Kirill Vankov about some topics on Siegel modular forms of higher genus during my stay. More precisely, I studied some special values of L-functions attached to Siegel modular forms and their congruence properties. Recently, such a kind of research objects is getting a lot of attention and is expected to be a rich source of applications towards some other interesting topics in arithmetic geometry, automorphic representation theory and so on. As one of the results obtained there, I showed some congruence properties for cuspidal Siegel modular forms obtained by the (Duke-Imamoglu-)Ikeda lifts of classical elliptic cuspforms. I wish it would conduce an affirmative evidence for the existence of p-adic families of cuspidal Siegel modular forms of higher genus and its application to the construction of certain p-adic L-functions. I had been participated a regular seminars on Number Theory in Grenoble, and gave a talk on my own results there. In addition, I also took part in some conferences which were held at the other places in Europe. When I participated the conference on analytic number theory in Clermont-Ferrand, I gave two talks about some results on the period of the Ikeda lift and its application towards a certain characterization of primes which gives a congruence between Hecke-eigenvalues of the Ikeda lift and some other cuspidal Siegel modular forms. It was so exciting for me to discuss with many participants about some topics on analytic number theory. I was really impressed by many interesting talks given by the others. In July, I took part in the conference “Codes, Invariants and Modular forms” which was held at the Max-Planck Institute of Mathematik in Bonn, Germany. It was a nice opportunity for me to study some interesting application of the theory of modular forms to theories of Codes and Invariants. I wish that my short stay in Grenoble provided me with a lot of nice and unforgettable experiences, and widened my area of research in mathematics. I would like to take this opportunity to express my sincere gratitude to the ITP and everyone concerned.