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RIMS Kôkyûroku Bessatsu B53

Algebraic Number Theory and Related Topics 2013

edited by Tadashi Ochiai, Takeshi Tsuji and Iwao Kimura

September, 2015
Research Institute for Mathematical Sciences
Kyoto University
Preface

The RIMS workshop “Algebraic Number Theory and Related Topics 2013” was held at Research Institute for Mathematical Sciences, Kyoto University from December 9 to December 13, 2013. The workshop was organized by Tadashi Ochiai (Osaka University), Takeshi Tsuji (University of Tokyo) and Iwao Kimura (University of Toyama).

The aim of the workshop was to overview recent developments in diverse branches related to algebraic number theory. There were research talks on Iwasawa theory, $l$-adic Galois representations, modular forms, $p$-adic Hodge theory, algebraic cycles and so on. We also invited several speakers to give survey talks on recent developments in number theory. The conference program included 28 talks and we had 169 participants during the conference.

This volume of RIMS Kôkyûroku Bessatsu edited by the three organizers is a collection of articles contributed by speakers of the conference. They are classified into three categories following the views of the authors and the anonymous referees: research articles, research announcements and survey articles. Each paper has been refereed and is in its final form.

We would like to express our gratitude to participants, speakers and everyone who contributed to the success of the conference. We would also like to express our sincere gratitude to the authors and the anonymous referees of the articles of this volume for their excellent jobs on a tight schedule.

September 2015

Tadashi Ochiai
Takeshi Tsuji
Iwao Kimura
Program
Algebraic Number Theory and Related Topics 2013

Date  December 9 (Mon) - December 13 (Fri), 2013
Place  Room 420, Research Institute for Mathematical Sciences, Kyoto University

December 9 (Mon)

9:55 – 10:05  Introduction

10:05 – 11:05  Koichi Kawada (Iwate University)
  The ternary Goldbach problem — from Hardy-Littlewood, Vinogradov to Helfgott (Survey Talk)

11:20 – 12:10  Yoshinori Mishiba (Kyushu University)
  Algebraic independence of certain positive characteristic multizeta values

13:40 – 14:30  Koji Tasaka (Kyushu University)
  Multiple Eisenstein series and Brown’s totally odd multiple zeta values

14:50 – 15:40  Shin-ichi Yasutomi (Toho University) Jun-ichi Tamura (Tsuda College)
  New multidimensional continued fraction algorithms and their applications

16:00 – 17:00  Kazuki Morimoto (Osaka City University)
  On algebraicity of special values of \( L \)-functions for \( \text{SO}(V) \times \text{GL}_2 \)

December 10 (Tue)

9:00 – 10:00  Shun’ichi Yokoyama (Kyushu University)
  Exploring Modular Forms using Computer Algebra Systems (Survey Talk)

10:15 – 11:05  Shin Hattori (Kyushu University)
  Ramification theory and perfectoid spaces

11:20 – 12:10  Yoshiyasu Ozeki (RIMS, Kyoto University)
  On Galois equivariance of homomorphisms between torsion potentially crystalline representations
13:40 – 14:30  Yuichi Hirano (University of Tokyo)  
Congruences of Hilbert modular forms over real quadratic fields and the special values of $L$-functions

14:50 – 15:40  Yoshitaka Maeda  
The so-called Maeda conjecture and related topics

16:00 – 17:00  Kazuhiro Fujiwara (Nagoya University)  
Indivisibility of relative class numbers for quadratic extensions of totally real fields

December 11 (Wed)

9:00 – 10:00  Kentaro Nakamura (Hokkaido University)  
The $p$-adic Langlands correspondence I (Survey Talk)

10:15 – 11:05  Sho Yoshikawa (University of Tokyo)  
Roots of the discriminant of an elliptic curve and its torsion points

11:20 – 12:10  Yasuhiro Terakado (University of Tokyo)  
Determinant of $l$-adic cohomology of a double covering of a projective space and the discriminant of the ramification divisor

13:40 – 14:30  Kotaro Sugahara (Kyushu University)  
Arithmetic Cohomology Groups

14:50 – 15:50  Takao Yamazaki (Tohoku University)  
$p$-adic soliton theory and torsion points on Jacobian varieties

December 12 (Thu)

9:00 – 10:00  Naoki Imai (University of Tokyo)  
The $p$-adic Langlands correspondence II (Survey Talk)

10:15 – 11:05  Wataru Kai (University of Tokyo)  
A $p$-adic exponential map for the Picard group and its application to the Albanese map

11:20 – 12:10  Hiroyasu Miyazaki (University of Tokyo)  
Special values of zeta functions of varieties over finite fields via higher Chow groups

13:40 – 14:30  Masatoshi Suzuki (Tokyo Institute of Technology)  
An inverse problem for canonical systems and its applications
14:50 – 15:40  Yu Yasufuku (Nihon University)
Arithmetic Properties of Coordinates of Orbit Points

16:00 – 17:00  Noriyuki Abe (Hokkaido University)
A classification of irreducible admissible modulo $p$ representations of reductive $p$-adic groups

December 13 (Fri)

9:00 – 10:00  Masato Kurihara (Keio University)
Rubin-Stark conjecture and Rubin-Stark elements (Survey Talk)

10:15 – 11:05  Takamichi Sano (Keio University)
A new conjecture for Rubin-Stark elements and its applications

11:20 – 12:10  Sachio Ohkawa (University of Tokyo)
On logarithmic nonabelian Hodge theory of higher level in characteristic $p$

13:40 – 14:30  Yuya Matsumoto (University of Tokyo)
Good reduction criterion for K3 surfaces

14:50 – 15:40  Keisuke Arai (Tokyo Denki University)
Non-existence of points rational over number fields on Shimura curves

16:00 – 17:00  Ahmed Abbes (IHES/CNRS)
The $p$-adic Simpson correspondence
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