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Algebraic Number Theory and Related Topics 2015

edited by Hiroki Takahashi, Yasuo Ohno and Takahiro Tsushima

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Research Institute for Mathematical Sciences
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November 30 ~ December 4, 2015

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Kyoto University, Kyoto, Japan

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Preface

This volume is the proceedings of the conference "Algebraic Number Theory and Related Topics 2015" held at RIMS, Kyoto University from November 30 (Mon) through December 4 (Fri), 2015. The conference was held as one of the workshops supported by the joint research program of RIMS, and was intended to cover a wide range of topics in number theory such as algebraic number theory, Iwasawa theory, arithmetic topology, inter-universal Teichmüller theory, arithmetic geometry, algebraic cycles, anabelian geometry, Galois representations and automorphic representations.

Articles in this volume were all written by speakers of the conference and their collaborators, and reviewed by anonymous referees. The articles are classified in the following three categories: Research Articles (usual original research articles), Research Announcements (announcements on results whose details are/will be published elsewhere), and Survey Articles (surveys explaining recent results, backgrounds, ideas and outlines of proofs etc. on specific topics).

We would like to thank all who kindly helped us to organize the conference and to edit these proceedings. In particular, we are grateful to anonymous referees for their kind cooperation, without which the proceedings would have never been completed, the graduate students who helped us during the conference, and all the staff of the joint research office at RIMS for their constant support. Finally we would like to express our sincere gratitude to all who recommended speakers, and to all the speakers of the conference for giving interesting talks and writing articles for this volume. We hope that the articles in this volume will lead to further developments in number theory and related subjects.

August 2018

Hiroki Takahashi
Yasuo Ohno
Takahiro Tsushima

Program

Algebraic Number Theory and Related Topics 2015

Date November 30 (Mon) - December 4 (Fri), 2015
Place Room 420, Research Institute for Mathematical Sciences, Kyoto University

November 30 (Mon)

9:45 – 10:00 Introduction

10:00 – 10:45 Minoru Hirose (Kyoto University)
Shintani zeta functions and Gross conjecture

10:55 – 11:40 Kazuto Ota (Keio University)
Kato's Euler system and the Mazur-Tate refined conjecture of BSD type

11:50 – 12:40 Florian Sprung (Princeton University/IAS)
Integral Euler systems and Iwasawa theory

14:10 – 14:55 Jun Ueki (Kyushu University/University of Tokyo)
Theory of genera and Iwasawa invariants for 3-manifolds

15:10 – 15:55 Kotaro Sugahara (Kyushu University)
Central extensions and reciprocity law for arithmetic surfaces

16:10 – 17:00 Takao Komatsu (Wuhan University)
Bernoulli-Carlitz numbers and Cauchy-Carlitz numbers

December 1 (Tue)

9:30 – 10:15 Keiji Adachi (Kyushu University)
Distance to cusps and stability

10:30 – 11:15 Megumi Takata (Kyushu University)
The infinite base change lifting associated to an APF extension of a mixed characteristic local field

11:30 – 12:30 Yuichiro Hoshi (RIMS, Kyoto University)
Introduction to inter-universal Teichmüller theory I (Survey)

14:05 – 14:50 Yoshinosuke Hirakawa (Keio University)
On the descent of certain modular Calabi-Yau varieties via the Cynk-Hulek construction

15:05 – 15:55 Hironori Shiga (Chiba University)
One visualization of Shimura's complex multiplication theorem via hypergeometric modular functions (joint work with Atsuhira Nagano)

16:10 – 17:00 Keisuke Arai (Tokyo Denki University)
Points on Shimura curves rational over imaginary quadratic fields in the non-split case

December 2 (Wed)

9:00 – 9:45 Kento Yamamoto (Chuo University)
On generators of the Chow group of zero-cycles on diagonal cubic surfaces over 3-adic fields

10:00 – 10:45 Wataru Kai (University of Tokyo)
A moving lemma in the affine space with modulus

11:00 – 11:45 Hiroyasu Miyazaki (University of Tokyo)
On moving algebraic cycles with modulus of bounded degree

12:00 – 13:00 Yuichiro Hoshi (RIMS, Kyoto University)
Introduction to inter-universal Teichmüller theory II (Survey)

December 3 (Thu)

9:30 – 10:15 Arata Minamide (RIMS, Kyoto University)
Indecomposability of various profinite groups arising from hyperbolic curves

10:30 – 11:15 Yu Yang (RIMS, Kyoto University)
On the existence, geometry and p-ranks of vertical fibers of coverings of curves

11:30 – 12:30 Yuichiro Hoshi (RIMS, Kyoto University)
Introduction to inter-universal Teichmüller theory III (Survey)

14:00 – 14:45 Yasuhiro Wakabayashi (University of Tokyo)
Ordinariness and duality of dormant opers

15:00 – 15:45 Yu Iijima (RIMS, Kyoto University)
Difference between l-adic Galois representations and pro-l outer Galois representations associated to hyperbolic curves

16:00 – 17:00 Hidekazu Furusho (Nagoya University)
Galois action on knots (Invited)

December 4 (Fri)

9:30 – 10:15 Ippei Nagamachi (University of Tokyo)
On a good reduction criterion for proper polycurves with sections

10:30 – 11:20 Yuji Odaka (Kyoto University)
Canonical Kähler metrics and arithmetics - Generalising Faltings height

11:35 – 12:25 Chris Hall (University of Wyoming)
Specialization and big monodromy

13:50 – 14:40 Haoyu Hu (University of Tokyo)
Semi-continuity of total dimension divisors for l-adic sheaves

14:50 – 15:35 Kazuki Tokimoto (University of Tokyo)
Affinoids in the Lubin-Tate perfectoid space and some cases of the local Langlands correspondence

15:45 – 16:40 Yoichi Mieda (University of Tokyo)
Non-abelian Lubin-Tate theory and Kloosterman sheaves

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