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# Algebraic Number Theory and Related Topics 2017

edited by Hiroshi Tsunogai, Takao Yamazaki and Yasushi Mizusawa

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*Algebraic Number Theory*

*and*

*Related Topics 2017*

*December 4 ~ 8, 2017*

*edited by Hiroshi Tsunogai, Takao Yamazaki  
and Yasushi Mizusawa*

*October, 2020*

*Research Institute for Mathematical Sciences*

*Kyoto University, Kyoto, Japan*

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## Preface

This volume is the proceedings of the conference “Algebraic Number Theory and Related Topics 2017” held at RIMS, Kyoto University from December 4th (Mon) through 8th (Fri), 2017. 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 geometry, automorphic representations, arithmetic topology, anabelian geometry and multiple zeta values.

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: Survey Articles (surveys explaining recent results, backgrounds, ideas and outlines of proofs etc. on specific topics), Research Articles (usual original research articles), and Research Announcements (announcements on results whose details are/will be published elsewhere).

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.

April 2020

Hiroshi Tsunogai  
Takao Yamazaki  
Yasushi Mizusawa

## Program

### Algebraic Number Theory and Related Topics 2017

**Date** December 4 (Mon) – December 8 (Fri), 2017

**Place** Room 420, Research Institute for Mathematical Sciences, Kyoto University

#### December 4 (Mon)

10:10 – 10:25 Introduction

10:25 – 11:15 Masanori Morishita (Kyushu University)

On local symbols and the reciprocity law for foliated dynamical systems on 3-manifolds

11:30 – 12:30 Shinya Harada

Hasse-Weil zeta functions of character varieties of hyperbolic 3-manifolds

14:00 – 14:50 Mirai Onoda (Tokyo Institute of Technology)

Additive higher Chow groups (1-cycle) and module of Kähler differentials

15:05 – 15:55 Kazuhiro Ito (Kyoto University)

On the arithmetic of K3 surfaces with complex multiplication and its applications

16:10 – 17:00 Hiroki Kato (University of Tokyo)

Wild ramification and restrictions to curves

**December 5 (Tue)**

- 9:20 – 10:10 Humio Ichimura (Ibaraki University)  
On the class numbers of real abelian fields of prime conductor
- 10:25 – 11:15 Takenori Kataoka (University of Tokyo)  
Fitting ideals in equivariant Iwasawa theory
- 11:30 – 12:30 Takamichi Sano (Osaka City University)  
Recent developments on Stark-type conjectures
- 14:00 – 14:50 Ryotaro Sakamoto (University of Tokyo)  
On the theory of Euler, Kolyvagin, and Stark systems
- 15:05 – 15:55 Kazuto Ota (Keio University)  
Anticyclotomic Iwasawa main conjecture for modular forms
- 16:10 – 17:00 Takehiro Hasegawa (Shiga University)  
An explicit Shimura tower of function fields: An application of  
Takeuchi's list

**December 6 (Wed)**

- 9:20 – 10:10 Tomokazu Kashio (Tokyo University of Science)  
A period-ring-valued gamma function and a refinement of the reci-  
procity law on Stark units
- 10:25 – 11:15 Masao Oi (University of Tokyo)  
Simple supercuspidal  $L$ -packets of quasi-split classical groups
- 11:30 – 12:20 Kaori Ota (Tsuda University)  
On power bases for rings of integers and indices of relative Galois  
extensions (joint work with graduate students)

**December 7 (Thu)**

- 9:20 – 10:10 Nao Komiyama (Nagoya University)  
On special values of multiple zeta functions at non-positive integers
- 10:25 – 11:15 Nobuo Sato (NCTS, National Taiwan University)  
Confluence relations for the multiple zeta values
- 11:30 – 12:30 Shuji Yamamoto (Keio University)  
A generalization of integral expression of multiple zeta values and its applications
- 14:00 – 14:50 Arata Minamide (RIMS, Kyoto University)  
On a direct product decomposition related to the Grothendieck-Teichmüller group
- 15:05 – 15:55 Kazumi Higashiyama (RIMS, Kyoto University)  
Reconstruction of function fields from pro- $p$  second configuration space groups
- 16:10 – 17:00 Shota Tsujimura (RIMS, Kyoto University)  
Geometric Version of the Grothendieck Conjecture for Universal Curves over Hurwitz Stacks

**December 8 (Fri)**

- 9:20 – 10:10 Shusuke Otabe (Tohoku University)  
On a purely inseparable analogue of the Abhyankar Conjecture for affine curves
- 10:25 – 11:15 Yu Yang (RIMS, Kyoto University)  
The anabelian geometry of curves over algebraically closed fields of positive characteristic (after Tamagawa)
- 11:30 – 12:20 Akira Sarashina (RIMS, Kyoto University)  
Reconstruction of one-punctured elliptic curves in positive characteristic by their geometric fundamental groups
- 14:00 – 14:50 Yoshiaki Okumura (Tokyo Institute of Technology)  
A Drinfeld module analogue of the Rasmussen-Tamagawa conjecture
- 15:05 – 15:55 Nobuo Tsuzuki (Tohoku University)  
Constancy of Newton polygons of  $F$ -isocrystals on Abelian varieties over finite fields and its application
- 15:55 – 16:10 Closing

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