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Algebraic Number Theory and Related Topics 2014

edited by Takeshi Tsuji, Hiroki Takahashi and Yuichiro Hoshi

May, 2017

**Research Institute for Mathematical Sciences
Kyoto University**

RIMS Kôkyûroku Bessatsu B64

*Algebraic Number Theory
and*

Related Topics 2014

December 1 ~5, 2014

edited by Takeshi Tsuji, Hiroki Takahashi and Yuichiro Hoshi

May, 2017

Research Institute for Mathematical Sciences

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Preface

This volume is the proceedings of the conference “Algebraic Number Theory and Related Topics 2014” held at RIMS, Kyoto University from December 1 (Mon) through December 5 (Fri), 2014. 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, p -adic Galois representations and p -adic cohomology, arithmetic fundamental groups, ramification theory, algebraic cycles and K -theory, and automorphic forms and Galois 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.

March 2017

Takeshi Tsuji
Hiroki Takahashi
Yuichiro Hoshi

Program

Algebraic Number Theory and Related Topics 2014

Date December 1 (Mon) - December 5 (Fri), 2014

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

December 1 (Mon)

- 9:45 – 10:00 Introduction
- 10:00 – 10:50 Kentaro Nakamura (Hokkaido University)
Local ε -isomorphisms for rank two p -adic representations of $\text{Gal}(\overline{\mathbb{Q}_p}/\mathbb{Q}_p)$ and a functional equation of Kato's Euler system
- 11:10 – 12:00 Kenji Sakugawa (Osaka University)
Polylogarithmic analogue of the Coleman-Ihara formula (joint work with H. Nakamura and Z. Wojtkowiak)
- 13:30 – 14:30 Chikara Nakayama (Hitotsubashi University)
Log abelian varieties (Survey)
- 14:45 – 15:35 Kazuaki Tajima (Tohoku University)
Stratification of the null cone in the non-split case (joint work with A. Yukié)
- 15:50 – 16:40 Yasuhiro Wakabayashi (Kyoto University · Osaka City University)
A theory of dormant opers on pointed stable curves

December 2 (Tue)

- 10:00 – 10:50 Yuri Yatagawa (University of Tokyo)
Characteristic cycle of a rank 1 sheaf on a surface
- 11:10 – 12:00 Enlin Yang (Tsinghua University)
Logarithmic version of the Milnor formula and the characteristic cycle of a tamely ramified sheaf
- 14:00 – 14:50 Yûsuke Okuyama (Kyoto Institute of Technology)
Potential geometry and (non-)archimedean dynamics on the Berkovich projective line
- 15:05 – 15:55 Hirofumi Niibo (Kyushu University)
Idelic class field theory for 3-manifolds (joint work with J. Ueki)

16:10 – 17:00 Masanori Morishita (Kyushu University)
 Arithmetic Milnor invariants and multiple power residue symbols
 in number fields (joint work with F. Amano)

December 3 (Wed)

9:30 – 10:20 Jerome Dimabayao (Kyushu University)
 On the cohomological coprimality of Galois representations of a
 p -adic field

10:35 – 11:25 Tomoki Mihara (University of Tokyo)
 On a new geometric construction of a family of Galois represen-
 tations associated to modular forms

11:40 – 12:40 Takahiro Tsushima (University of Tokyo)
 Perfectoid spaces I: Foundations (Survey)

December 4 (Thu)

9:30 – 10:20 Wataru Kai (University of Tokyo)
 On the Albanese cokernel of varieties over p -adic fields

10:35 – 11:25 Takamichi Sano (Keio University)
 On the Iwasawa main conjecture over a general number field (joint
 work with D. Burns and M. Kurihara)

11:40 – 12:30 Tomokazu Kashio (Tokyo University of Science)
 Stark's conjecture over the rational number field and CM-periods
 of Fermat curves

14:00 – 15:00 Tetsushi Ito (Kyoto University)
 Perfectoid Spaces II: Applications to number theory (Survey)

15:15 – 16:00 Fuetaro Yobuko (Tohoku University)
 Mass formula for abelian varieties

16:15 – 17:00 Takuya Maruyama (University of Tokyo)
 An effective upper bound for the number of principally polarized
 abelian schemes

December 5 (Fri)

10:00 – 10:50 Yasuhiro Kishi (Aichi University of Education)
 Continued fraction expansion with even period and a primary
 symmetric part with extremely large end (joint work with
 F. Kawamoto, H. Suzuki and K. Tomita)

- 11:10 – 12:00 John C. Miller (Rutgers University)
On class numbers of cyclotomic fields and \mathbb{Z}_p -extensions
- 13:30 – 14:30 Manabu Ozaki (Waseda University)
Non-abelian Iwasawa theory of \mathbb{Z}_p -extensions (Survey)
- 14:45 – 15:35 Takae Tsuji (Tokai University)
On the Iwasawa λ -invariant of the cyclotomic \mathbb{Z}_2 -extension of $\mathbb{Q}(\sqrt{p})$ (joint work with T. Fukuda, K. Komatsu and M. Ozaki)
- 15:50 – 16:40 Noriko Hirata-Kohno (Nihon University)
New Diophantine criterion of polylogarithms over an algebraic number field (joint work with M. Ito, Y. Washio and S. David)

Contents

Preface	i
Program	ii
Contents	v
Research Articles	1
平田典子 (Noriko HIRATA-KOHNO), 伊藤勝 (Masaru ITO), 鷺尾勇介 (Yusuke WASHIO)	3
A criterion for the linear independence of polylogarithms over a number field	
John C. MILLER	19
Real cyclotomic fields of prime conductor and their class numbers II	
中村博昭 (Hiroaki NAKAMURA), 佐久川憲児 (Kenji SAKUGAWA), Zdzisław WOJTKOWIAK	33
Polylogarithmic analogue of the Coleman-Ihara formula, II	
奥山裕介 (Yûsuke OKUYAMA)	55
Adelically summable normalized weights and adelic equidistribution of effective divisors having small diagonals and small heights on the Berkovich projective lines	
都地崇恵 (Takae TSUJI)	67
On the Iwasawa λ -invariants of cyclotomic \mathbb{Z}_2 -extensions of real abelian fields	
Research Announcements	77
Jerome T. DIMABAYAO	79
A report on the cohomological coprimality of Galois representations	
甲斐亘 (Wataru KAI)	85
p 進体上の多様体のアルバネーゼ余核について (On the Albanese cokernel of varieties over p -adic fields)	

加塩朋和 (Tomokazu KASHIO).....	93
Stark's conjecture over the rational number field and CM-periods of Fermat curves	
河本史紀 (Fuminori KAWAMOTO), 岸康弘 (Yasuhiro KISHI), 鈴木浩志 (Hiroshi SUZUKI), 富田耕史 (Koshi TOMITA)	107
A construction of real quadratic fields of minimal type and primary symmetric parts of ELE type	
三原朋樹 (Tomoki MIHARA)	123
A new geometric construction of a family of Galois representations associated to modular forms: research announcement	
森下昌紀 (Masanori MORISHITA)	143
Arithmetic Milnor invariants and multiple power residue symbols in number fields: a précis	
中村健太郎 (Kentaro NAKAMURA)	153
The local and global ε -conjectures for the rank two case	
若林泰央 (Yasuhiro WAKABAYASHI)	175
点付き安定曲線上の休眠乍の数え上げ：研究報告 (Counting dormant opers on a pointed stable curve : a research announcement)	
陽恩林 (Enlin YANG)	195
Logarithmic version of the Milnor formula (research announcement)	
谷田川友里 (Yuri YATAGAWA)	201
Characteristic cycle of a rank 1 sheaf on a surface: research announcement	
呼子笛太郎 (Fuetaro YOBUKO)	209
3次元超特異アーベル多様体の mass 公式についての研究報告 (Mass formula for supersingular abelian varieties of dimension three, a research announcement)	

Survey Articles	217
津嶋貴弘 (Takahiro TSUSHIMA)	219
Perfectoid 空間論の基礎 (Foundations for theory of perfectoid spaces)	
伊藤哲史 (Tetsushi ITO)	255
Perfectoid 空間論の整数論への応用 (Number theoretic applications of the theory of perfectoid spaces)	
中山能力 (Chikara NAKAYAMA)	295
Log abelian varieties (Survey)	
尾崎学 (Manabu OZAKI)	313
\mathbf{Z}_p -拡大の非アーベル岩澤理論 — 概説と展望 (Non-abelian Iwasawa theory of \mathbf{Z}_p -extensions — overview and outlook)	