<table>
<thead>
<tr>
<th>項目</th>
<th>内容</th>
</tr>
</thead>
<tbody>
<tr>
<td>ティト</td>
<td>数理解析研究所講究録別冊 = RIMS Kokyuroku Bessatsu</td>
</tr>
<tr>
<td>タイトル</td>
<td>未定</td>
</tr>
<tr>
<td>号</td>
<td>未定</td>
</tr>
<tr>
<td>仮出</td>
<td>未定</td>
</tr>
<tr>
<td>仮出</td>
<td>未定</td>
</tr>
<tr>
<td>仮出</td>
<td>未定</td>
</tr>
<tr>
<td>仮出</td>
<td>未定</td>
</tr>
</tbody>
</table>

URL: [http://hdl.handle.net/2433/209090](http://hdl.handle.net/2433/209090)
Algebraic Number Theory and Related Topics 2011
November 28 ~ December 2, 2011
edited by Noriyuki Suwa, Atsushi Shiho and Kanetomo Sato

December, 2013
Research Institute for Mathematical Sciences
Kyoto University, Kyoto, Japan
Preface

The RIMS workshop “Algebraic Number Theory and Related Topics 2011” was held at Research Institute for Mathematical Sciences of Kyoto University from November 28 to December 2, 2011. The workshop was organized by Noriyuki Suwa (Chuo University), Atsushi Shiho (University of Tokyo) and Kanetomo Sato (Chuo University).

The aim of the workshop was to overview recent developments in diverse branches of number theory: algebraic number theory, arithmetic geometry, automorphic forms and so on. The conference program included 25 talks in various areas of number theory and we had 165 participants during the conference.

This volume of RIMS Kôkyûroku Bessatsu edited by the three organizers is a collection of articles contributed by the invited speakers of the conference. They are divided into three categories: survey articles, research announcements and research articles for the convenience of reading and referring. Each paper was refereed by experts and is in final form.

We remember that the Northeastward of Japan was hit by an extraordinary earthquake on 2011 March 11 and that, consequently, the Fukushima atomic power plants suffered most serious damage. Evidently it is very difficult to keep the situation under control. The disaster led the organizers to worry that the conference would not be held as usual in a year after the catastrophe. Nevertheless, our conference showed the consecutive activity of mathematics in Japan. Four speakers attended the conference from Tohoku University and young mathematicians gave interesting talks.

The organizers would like to express their gratitude to everyone who contributed to the success of the conference and especially to the contributers and the anonymous referees of the articles of this volume who provided their excellent jobs on a tight schedule.

November 2013

Noriyuki Suwa
Atsushi Shiho
Kanetomo Sato
Program
Algebraic Number Theory and Related Topics 2011

Date November 28 (Mon) - December 2 (Fri), 2011
Place Room 420, Research Institute for Mathematical Sciences, Kyoto University

November 28 (Mon)
10:25 – 10:30 Introduction
10:30 – 11:20 Nobuo Tsuzuki (Tohoku University)
    Arithmetic families of Calabi-Yau varieties having a generalized hypergeometric function as a period integral
11:30 – 12:20 Fang-Ting Tu (Waseda University)
    Automorphic forms on Shimura curves and algebraic transformations of hypergeometric functions
14:00 – 14:50 Shun Ohkubo (University of Tokyo)
    The $p$-adic monodromy theorem in the imperfect residue field case
15:00 – 15:50 Valentina Di Proietto (University of Tokyo/Università di Padova)
    Kernel of the monodromy operator for semistable curves
16:10 – 17:00 Olivier Brinon (University of Tokyo/Université de Paris-Nord)
    Overconvergent Igusa tower and overconvergent Siegel forms

November 29 (Tue)
9:30 – 10:20 Takao Yamazaki (Tohoku University)
    Voevodsky’s motif and Weil reciprocity
10:30 – 11:20 Kensaku Kinjo (University of Tokyo)
    Hypergeometric series and arithmetic-geometric mean over 2-adic fields
11:30 – 12:20 Yoshinori Mishiba (Kyushu University)
    On $v$-adic periods of $t$-motives
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00 – 14:50</td>
<td>Rin Sugiyama (Nagoya University)</td>
<td>Tate conjecture for products of Fermat varieties of different degrees</td>
</tr>
<tr>
<td>15:00 – 15:50</td>
<td>Naoki Imai (RIMS, Kyoto University)</td>
<td>Compactly supported cohomology and nearby cycle cohomology of open Shimura varieties of PEL type</td>
</tr>
<tr>
<td>16:10 – 17:00</td>
<td>Masaki Hanamura (Tohoku University)</td>
<td>Relative algebraic correspondences and mixed motivic sheaves</td>
</tr>
</tbody>
</table>

**November 30 (Wed)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 – 10:20</td>
<td>Filippo A. E. Nuccio Mortarino Majno di Capriglio (Osaka University)</td>
<td>Cyclotomic units and Greenberg conjecture</td>
</tr>
<tr>
<td>10:30 – 11:20</td>
<td>Abdul Hameed (NUCES, Lahore Campus),</td>
<td>On monogeneity of pure octic fields and maximal subfields of the $m$-th cyclotomic field</td>
</tr>
<tr>
<td></td>
<td>Toru Nakahara (NUCES, Peshawar Campus),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tsuyoshi Uehara (Saga University)</td>
<td></td>
</tr>
<tr>
<td>11:30 – 12:20</td>
<td>Fumiya Amano (Kyushu University)</td>
<td>On a certain nilpotent extension of degree 64 and the 4-th multiple residue symbol</td>
</tr>
</tbody>
</table>

**December 1 (Thu)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:30 – 10:20</td>
<td>Keisuke Arai (Tokyo Denki University)</td>
<td>Algebraic points on Shimura curves of $\Gamma_0(p)$-type</td>
</tr>
<tr>
<td>10:30 – 11:20</td>
<td>Tadahisa Nara (Tohoku University)</td>
<td>On the Mordell-Weil groups of twist families of elliptic curves</td>
</tr>
<tr>
<td>11:30 – 12:20</td>
<td>Masao Ooi (Kyoto University)</td>
<td>Differential Euler systems associated to symmetric squares of modular forms</td>
</tr>
<tr>
<td>14:00 – 14:50</td>
<td>Kentaro Nakamura (Hokkaido University)</td>
<td>Iwasawa cohomology and Bloch-Kato exponential map for $B$-pairs</td>
</tr>
</tbody>
</table>
15:00 – 15:50  Yoshiyasu Ozeki (Kyushu University)
Torsion representations of \((\varphi, G)\)-modules

16:10 – 17:00  Cédric Pépin (Université de Leuven)
Néron models of Picard varieties

December 2 (Fri)

10:00 – 10:50  Masatoshi Suzuki (University of Tokyo)
On the zeros of Weng zeta functions for Chevalley groups

11:00 – 11:50  Yoshitaka Sasaki (Kinki University)
Number theoretic and combinatorial properties of poly-Euler numbers

13:30 – 14:20  Yuya Matsumoto (University of Tokyo)
On good reduction of some K3 surfaces

14:30 – 15:20  Daisuke Shiomi (Nagoya University)
On the Jacobian of cyclotomic function fields

15:40 – 16:30  Yasuhiro Wakabayashi (RIMS, Kyoto University)
On the cuspidalization problem for hyperbolic curves over finite fields
Contents

Preface ................................................................. i
Program ............................................................... ii
Contents .............................................................. v

Survey Articles ......................................................... 1

Toroidal compactifications of Shimura varieties of PEL type and its applications
 Naoki IMAI and Yoichi MIEDA ................................. 3
Néron models of Picard varieties
 Cédric PÉPIN ......................................................... 25

Research Announcements ............................................ 39

On a certain nilpotent extension over $\mathbb{Q}$ of degree 64 and the 4-th multiple residue symbol
 Fumiya AMANO ....................................................... 41
Kernel of the monodromy operator for semistable curves
 Valentina DI PROIETTO .......................................... 51
On $v$-adic periods of $t$-motives: a resume
 Yoshinori MISHIBA .................................................. 59
Torsion representations arising from $(\varphi, \Gamma)$-modules: A resume
 Yoshiyasu OZEKI ..................................................... 67
相対的な代数的対応と混合モチーフ層 (Relative algebraic correspondences and mixed motivic sheaves)
花村昌樹 (Masaki HANAMURA) ............................... 85
Hypergeometric series and arithmetic-geometric mean over 2-adic fields
 金城謙作, 宮坂有恵 (Kensaku KINJO and Yuken MIYASAKA) ........................................ 99
On good reduction of some K3 surfaces (announcement)
 松本雄也 (Yuya MATSUMOTO) .................................. 111
Robba 環上の de Rham$(\varphi, \Gamma)$-加群の岩澤理論
 中村健太郎 (Kentaro NAKAMURA) .......................... 115
楕円曲線のツイストの族の Mordell–Weil 群について
 奈良忠央 (Tadahisa NARA) ...................................... 141
有限体上の異なる次数の Fermat 多様体の積に対する Tate 予想
 杉山倫 (Rin SUGIYAMA) ......................................... 151
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Voevodsky’s motives and Weil reciprocity)</td>
<td>165</td>
</tr>
<tr>
<td>山崎隆雄 (Takao YAMAZAKI)</td>
<td></td>
</tr>
</tbody>
</table>

**Research Articles** .................................................................. 183

- On the Rasmussen-Tamagawa conjecture for QM-abelian surfaces
  - Keisuke ARAI ........................................................................ 185
- Differential Euler systems associated to modular forms (1)
  - Masao OOI .......................................................................... 197
- Periodicity on poly-Euler numbers and Vandiver type congruence for Euler numbers
  - Yasuo OHNO and Yoshitaka SASAKI ..................................... 205
- Explicit formulas for Hasse-Witt invariants of cyclotomic function fields with conductor of degree two
  - Daisuke SHIOMI .................................................................. 213
- Algebraic transformations of hypergeometric functions arising from theory of Shimura curves
  - Fang-Ting TU .................................................................... 223