

数理解析研究所講究録 2100

RIMS 共同研究 (公開型)

保型形式の解析的・数論的研究

京都大学数理解析研究所

2019年1月

数理解析研究所講究録は、京都大学数理解析研究所の共同利用研究集会および共同研究の記録として1964年に刊行が開始されました。当研究所が全国共同利用研究所として発足した翌年のことでしたが、以来半世紀、毎年数十巻を刊行し、2016年には第2000巻が刊行されるに至りました。第1巻から第2000巻までに収録された論文数は29,265編、総頁数は342,960頁という膨大なものであり、最先端の数学・数理科学分野の研究状況を伝えるのみならず、我が国の数学・数理科学の発展の歴史を留める文献として、他に類例を見ない論文集となっています。

講究録の内容は当研究所のウェブサイトおよび京都大学の学術情報リポジトリにおいても公開され、年間の総アクセス数は1,380,032回（2017年度）を数えるなど、多数の方にご利用いただいています。

講究録の使用言語は論文著者の判断に任されていますが、結果的に日本語が多用されていることが特徴の一つとなっています。その結果、講究録は、数学・数理科学の広い領域における最先端の専門知識に母国語でアクセスできるものとして、近年の英語化の流れの中で、重要な文献となりつつあります。

当研究所の共同利用事業に参加し講究録の論文を執筆していただいた多数の方々に対し、講究録を大きく成長させていただいたことを深く感謝いたしますとともに、これからも、当研究所の国際共同利用・共同研究拠点(*)としての活動にご参加いただき、講究録の発展にご協力いただけますよう心よりお願い申し上げます。

*数理解析研究所は2018年11月13日、共同利用・共同研究拠点の認定が廃止され、新しく国際共同利用・共同研究拠点に認定されました。

RIMS Kôkyûroku 2100

*Analytic and Arithmetic Theory of
Automorphic Forms*

January 15 ~ 19, 2018

edited by Yoshinori Mizuno

January, 2019

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

This is a report of research done at the Research Institute for Mathematical Sciences,
an International Joint Usage/Research Center located in Kyoto University.
The papers contained herein are in final form and will not be submitted for publication elsewhere.

講究録

Kôkyûroku

RIMS Kôkyûroku was started in 1964 as the proceedings of symposia, colloquia and workshops supported by RIMS, the Research Institute for Mathematical Sciences, Kyoto University. It was the next year of the establishment of RIMS as one of the Nationwide Cooperative Research Centers. For half a century since then, several dozen volumes have been issued each year, and the 2,000th volume was issued in 2016. The volumes of Kôkyûroku from the 1st through the 2,000th, containing enormous 29,265 articles and 342,960 pages, not only deliver the latest research activities in mathematics and mathematical sciences but also constitute valuable and incomparable collections of articles that pass down history of progress of mathematics and mathematical science in Japan.

Articles in Kôkyûroku are available on the websites of RIMS and Kyoto University Research Information Repository. They are very frequently accessed on the internet, with a total of as many as 1,380,032 accesses in 2017.

The authors choose the languages to write articles, and many are written in Japanese, which is one of the characteristics of Kôkyûroku. As a result, Kôkyûroku is regarded as a significant and important literature which allows easy access to the latest specialized knowledge in the large fields of mathematics and mathematical sciences written in native language for Japanese readers, while more and more research papers are being written in English in recent years.

We are deeply grateful to many of those who have participated in cooperative research activities of RIMS and greatly developed Kôkyûroku. We heartily ask for your continuous participation in research activities at RIMS as an International Joint Usage/Research Center(*) and your warm support and cooperation for the fruitful development of Kôkyûroku.

* RIMS was certified as an International Joint Usage/Research Center on Nov. 13, 2018.

はじめに

この講究録は、2018年1月15日（月）から1月19日（金）の日程で開催されたRIMS共同研究（公開型）「保型形式の解析的・数論的研究」の報告集です。研究集会でご講演頂いた方々に、原稿を作成頂きましたことと併せて、深く感謝の意を表します。また、運営にご協力頂いた方々に、そしてお集まり頂きました多くの皆様に心より御礼申し上げます。

研究代表者：水野 義紀（徳島大学）

研究副代表者：若槻 聡（金沢大学）

This volume is the proceedings of the RIMS workshop “Analytic and Arithmetic Theory of Automorphic Forms” held from 15 January 2018 to 19 January 2018 at Research Institute for Mathematical Sciences in Kyoto, Japan. It includes the reports of 20 research talks on recent developments of automorphic forms and related topics. We thank the speakers for their excellent lectures and articles they have contributed. We also thank the participants of the workshop.

The organizers : Yoshinori Mizuno (Tokushima University)
Satoshi Wakatsuki (Kanazawa University)



RIMS Workshop

Analytic and Arithmetic Theory of Automorphic Forms

Main organizer : Yoshinori Mizuno (Tokushima University)

Sub-organizer : Satoshi Wakatsuki (Kanazawa University)

Date : January 15 (Mon.) - 19 (Fri.), 2018.

Venue : Room 420, Research Institute of Mathematical Science, Kyoto University.
(Only on Jan. 18 (Thu.), the place will be changed to Maskawa Hall.)

Jan. 15 (Mon.)

13:30 – 14:30 **Kenji Makiyama** (Kyoto Sangyo University)

A p -adic family of the D -th Saito-Kurokawa lifts for a Coleman family and the Bloch Kato conjecture.

14:45 – 15:45 **Ren-He Su** (Kyoto University)

On linear relations between L -values and arithmetic functions.

16:00 – 17:00 **Takao Komatsu** (Wuhan University)

Diophantine Frobenius problems from semigroup's series and identities for zeta functions.

Jan. 16 (Tue.)

9:45 – 10:45 **Soumya Das** (Indian Institute of Science)

Petersson norms of not necessarily cuspidal Jacobi modular forms and applications.

11:00 – 12:00 **Tomonori Moriyama** (Osaka University)

Theta series constructed from invariant harmonic polynomials.

13:30 – 14:30 **Alexandru Ghitza** (University of Melbourne)

Differential operators on modular forms, and Galois representations.

14:45 – 15:45 **Hiroki Aoki** (Tokyo University of Science)

On mixed weight Hilbert modular forms and their structure theorem.

16:00 – 17:00 **Chia-Fu Yu** (Institute of Mathematics, Academia Sinica)

Reduced unit groups in totally definite quaternion algebras over real quadratic fields.

Jan. 17 (Wed.)

9:20 – 9:40 On the RIMS workshop next academic year.

9:45 – 10:45 **Isao Ishikawa** (RIKEN AIP/Keio University)

On explicit interpolation formulas of twisted triple product p -adic L -functions.

11:00 – 12:00 **Soma Purkait** (Tokyo University of Science)

Minus space of half-integral weight.

13:30 – 14:30 **Yumiko Hironaka** (Waseda University)

Spherical functions on the space of p -adic quaternion hermitian forms.

14:45 – 15:45 **Jan Bruinier** (TU Darmstadt)

Generating series of special divisors on arithmetic ball quotients.

16:00 – 17:00 **Tamotsu Ikeda** (Kyoto University),

Hidenori Katsurada (Muroran Institute of Technology)

On the Gross-Keating invariant for hermitian forms.

Jan. 18 (Thu.)

9:45 – 10:45 **Yosuke Irie** (Kyushu University)

Hyperbolic Eisenstein series on n -dimensional hyperbolic spaces.

11:00 – 12:00 **Keiichi Gunji** (Chiba Institute of Technology)

On the computation of ramified Siegel series.

13:30 – 14:30 **Hiroaki Narita** (Kumamoto University)

Explicit constructions of non-tempered cusp forms on orthogonal groups of low split ranks.

14:45 – 15:45 **Cris Poor** (Fordham University)

Computing with paramodular forms.

16:00 – 17:00 **Tomoyoshi Ibukiyama** (Osaka University)

Siegel modular forms of middle parahoric subgroups and Ihara lift.

Jan. 19 (Fri.)

9:45 – 10:45 **Siegfried Böcherer** (University of Mannheim)

Arithmetic properties of vector-valued Siegel modular forms.

11:00 – 12:00 **Bernhard Heim** (German University of Technology (Oman))

Powers of the Dedekind Eta Function and Hurwitz Polynomials.

保型形式の解析的・数論的研究
Analytic and Arithmetic Theory of Automorphic Forms
RIMS 共同研究（公開型）報告集

2018年1月15日～1月19日
研究代表者 水野 義紀 (Yoshinori Mizuno)

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