

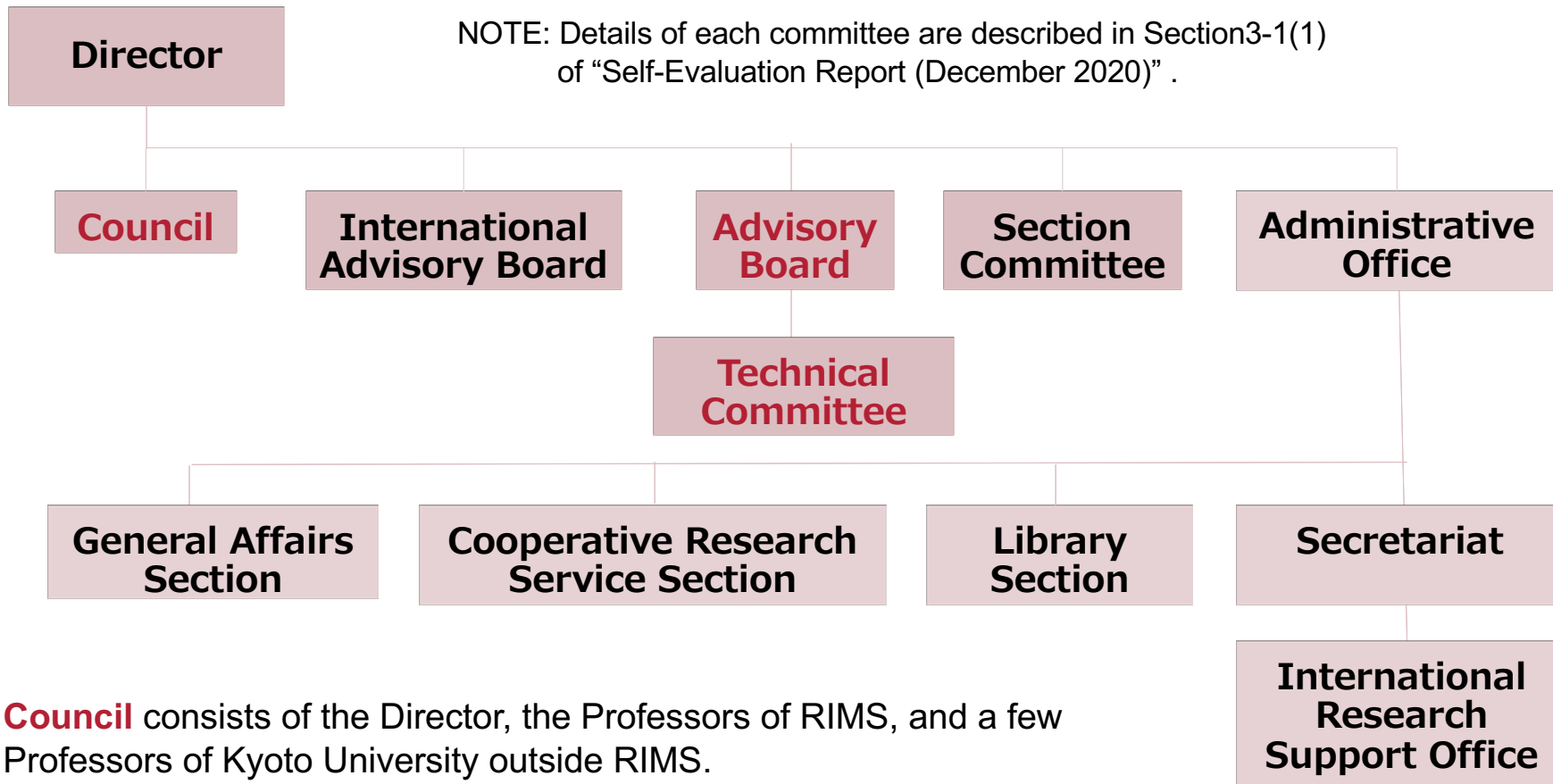
**For the Assessment of RIMS  
as  
an International Mathematical Research Center**

February 4 and 9, 2021

## RIMS Shortest History

- 1963 April      Founded as a **Co-operative Research Center (CRC)** in Japan, to promote research in the mathematical sciences
- 1975~          RIMS's own **graduate course** in the mathematical sciences at the Division of Mathematics and Mathematical Sciences  
(A division in the Graduate School of Sciences, Kyoto U.)
- 2010 Apr.      Certified as a **Joint Usage/Research Center (JU/RC)**  
(The system of CRC was changed to that of JU/RC.)
- 2016 Apr.      Certified as a **Joint Usage/Research Center (2<sup>nd</sup> term)**
- 2018 Nov.      Certified as an **International Joint Usage/Research Center**  
(Int. JU/RC)

# Organization



**Council** consists of the Director, the Professors of RIMS, and a few Professors of Kyoto University outside RIMS.

**Advisory board** decides and makes proposals on basic policies for the cooperative research activities of the Institute.

**Technical committee** screens the plans for the cooperative research activities proposed by researchers throughout Japan and the world.

# Missions of RIMS

1. A **research institute** in the mathematical sciences, as a division of Kyoto University
2. A part of the **Graduate School of Science**, providing graduate level education in mathematics jointly with the Department of Mathematics
3. **International Joint Usage / Research Center**, serving the mathematical community in Japan and the world

# 1. As a Research Institute

## Quota of RIMS faculty members

Professors	Associate Professors	Lecturers	Assistant Professors	Total
12	10	3	11 *(2)	36 *(2)

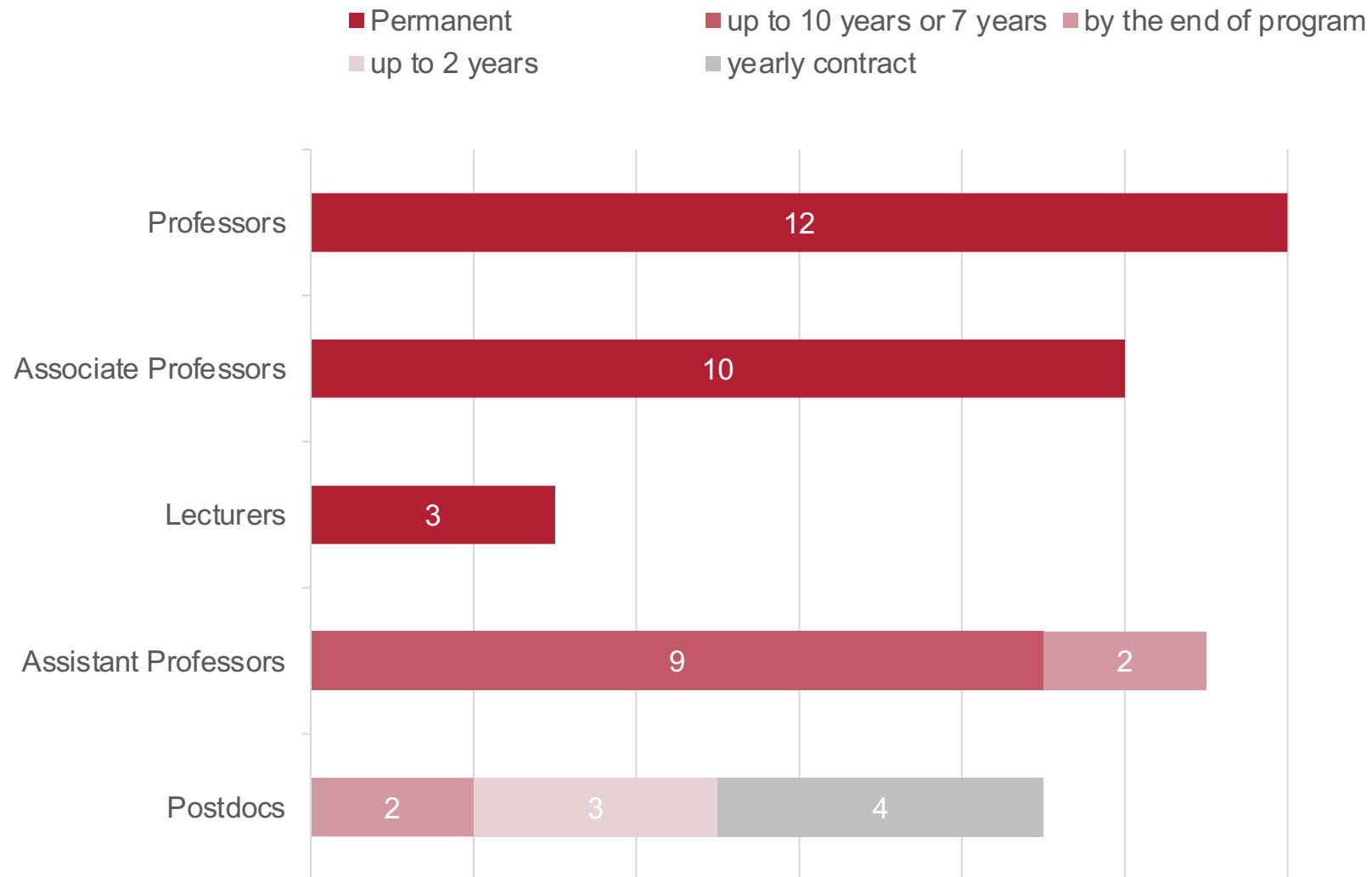
\*(2) indicates the number of Program-Specific Assistant Professors included in the number of Assistant Professors.

## (Ref) Quota of Dept. of Mathematics , Kyoto University

Professors	Associate Professors	Lecturers	Assistant Professors	Total
19 (1)	21 (3)	2 (1)	13 (1)	55 (6)

\*Numbers in ( ) indicates the number of staffs who have another position in Kyoto University, including the number.

# Tenure of Staffs



## Research Areas (Profs.)

- Professors (12)
  - A.Tamagawa (Number Theory, Arithmetic Geometry)
  - S.Mochizuki (Arithmetic Geometry)
  - Y. Namikawa (Algebraic Geometry)
  - T.Mochizuki (Differential Geometry, Algebraic Geometry)
  - T.Arakawa (Representation Theory)
  - K.Ono (Differential Geometry, Topology)
  - T.Ohtsuki (Topology)
  - N.Ozawa (Operator Algebra, Analytic Group Theory)
  - T.Kumagai (Probability)
  - K.Nakanishi (Nonlinear PDE))
  - K.Makino (Discrete Mathematics, Optimization and Theory of Algorithms)
  - M.Hasegawa (Theoretical Computer Science)

## Research Areas (Assoc. Profs., Lecturers)

- Associate Professors (10)
  - Y.Hoshi (Arithmetic Geometry)
  - M.Kawakita (Algebraic Geometry)
  - N.Nakayama (Algebraic Geometry)
  - M.Saito (Algebraic Geometry)
  - T.Arakawa (Representation Theory)
  - R.Fukushima (Probability Theory)
  - T.Kawai (Quantum Field Theory, Mathematical Physics)
  - S.Takehiro (Geophysical Fluid Dynamics)
  - K.Terui (Mathematical Logic)
  - Y.Kobayashi (Optimization Theory)
  - D.Croydon (Probability)
  - K.Ishimoto (Fluid mechanics)
  - A.Kawamura (Theory of computation)
- Lecturers (3)
  - F.Tan (Arithmetic Geometry and Galois Representations)
  - G.Yamashita (Arithmetic Geometry)
  - N.Kishimoto (Nonlinear PDE)

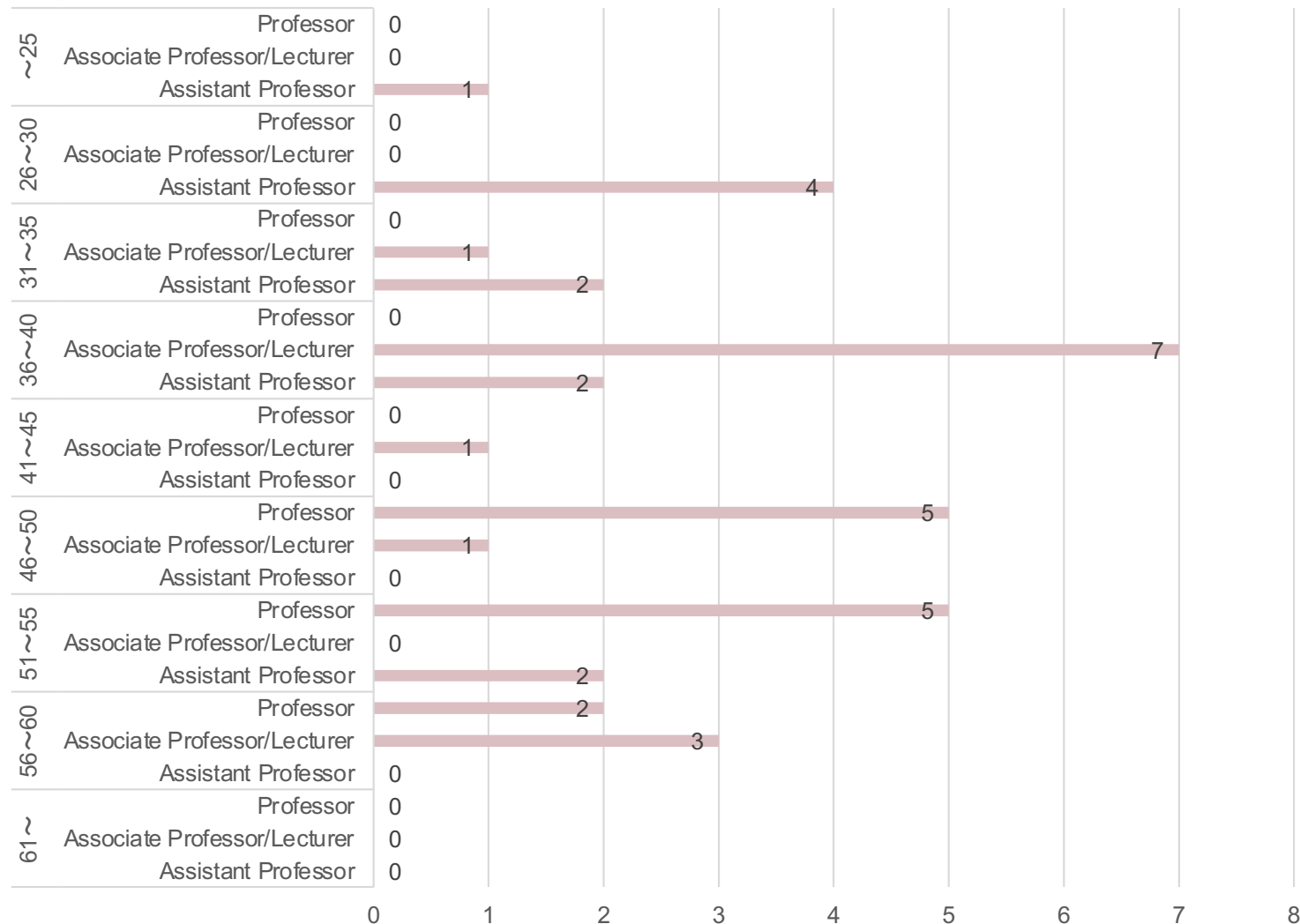


## Research Areas (Assistant Profs.)

- Assistant Professors (10)
  - T.Koshikawa (Number theory, arithmetic geometry)
  - S.Helmke (Algebraic geometry)
  - H.Hikita (Geometric representation theory)
  - T.Ooura (Numerical analysis)
  - K.Ishikawa (Topology)
  - S.Ishikawa (Differential geometry)
  - K.muroya (Theoretical computer science)
  - M.yamashita (Differential geometry and theory of operator algebras)
  - S.Tsujimura (Arithmetic geometry)
- Program-Specific Assistant Professors (2)
  - Y.Isono (Theory of operator algebras)
  - Y.Yu (Arithmetic geometry)

# Age Distribution of Faculty Members

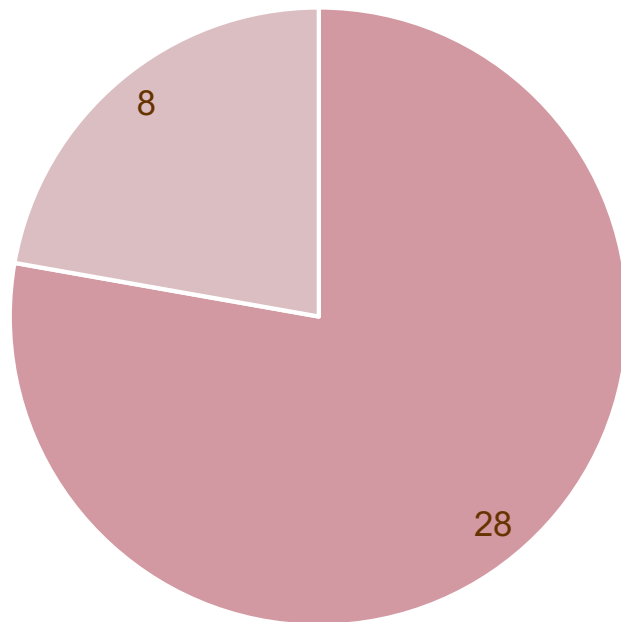
Professors, associate professors and assistant professors: their numbers and age distribution  
(Their numbers are authorized by the government with necessary funds allocation.)



\* 2 of Program-Specific Assistant Professors included in the number of Assistant Professors.

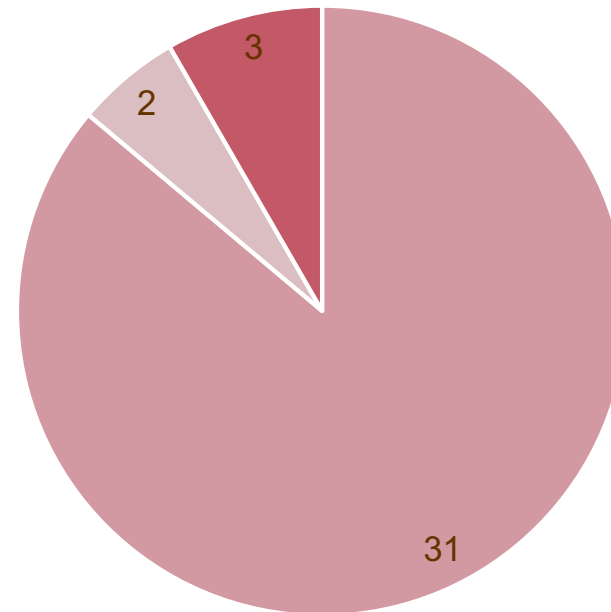
# Research Areas & Diversity of Faculty Members

Research Areas



■ Pure math. ■ Appl. math.

Diversity



■ Japanese (M) ■ Japanese (F) ■ International (M)

## Open Recruitments in the Last 5 years

Assistant Professor	2016* <sup>1</sup>	2017	2018	2019* <sup>1</sup>	2020
Post	1	1	2	1	1
Applicant	9	5	37	6	52
Female Applicant	(1)	(5)	(3)	(0)	(2)

\* Open recruitment for female researchers.  
Details of the recruitment are described in Section 2 of “Self-Evaluation Report (December 2020)”, pp.6.

Researcher* <sup>2</sup>	2016	2017	2018	2019	2019* <sup>1</sup>
Post	2	1	3	1	2
Applicant	29	14	41	16	5
Female Applicant	(1)	(0)	(1)	(1)	(0)

\*<sup>1</sup> Program-Specific post in specific research area.

\*<sup>2</sup> No offer in 2015 and recruitment 2020 is ongoing now.

## International Visiting Professors

3 positions of international visiting professors are authorized by the Government with allocated funds. Each visiting professor should stay for over 3 months.

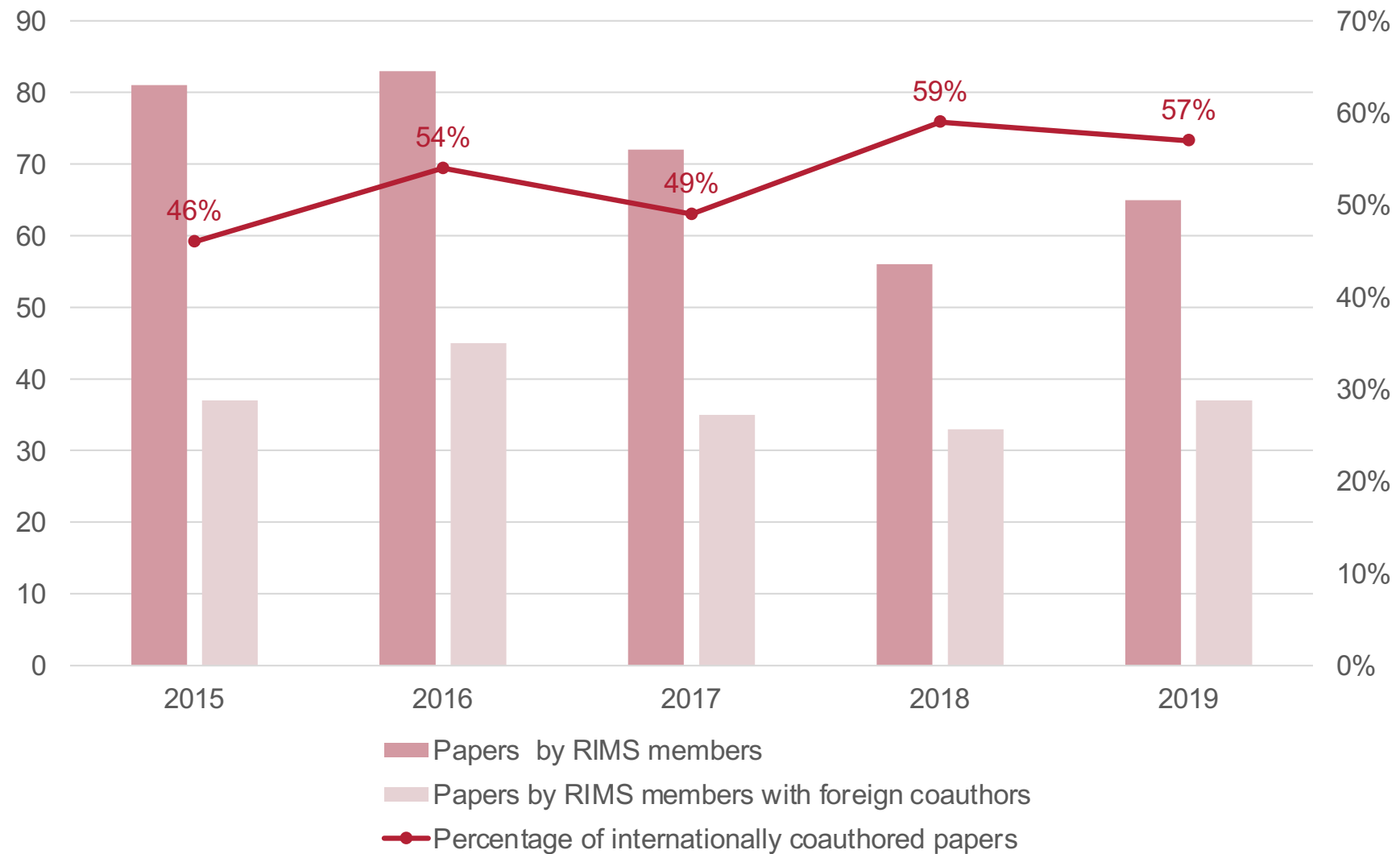
2012	2013	2014	2015	2016	2017	2018	2019	2020
10	10	10	9	9	11	11	9	1*

\* Due to COVID-19, many invitation plans were postponed in 2020. However, Kyoto University allowed to re-schedule plans with carry over of budget. Many of plans scheduled in 2020 will be implemented in 2021.

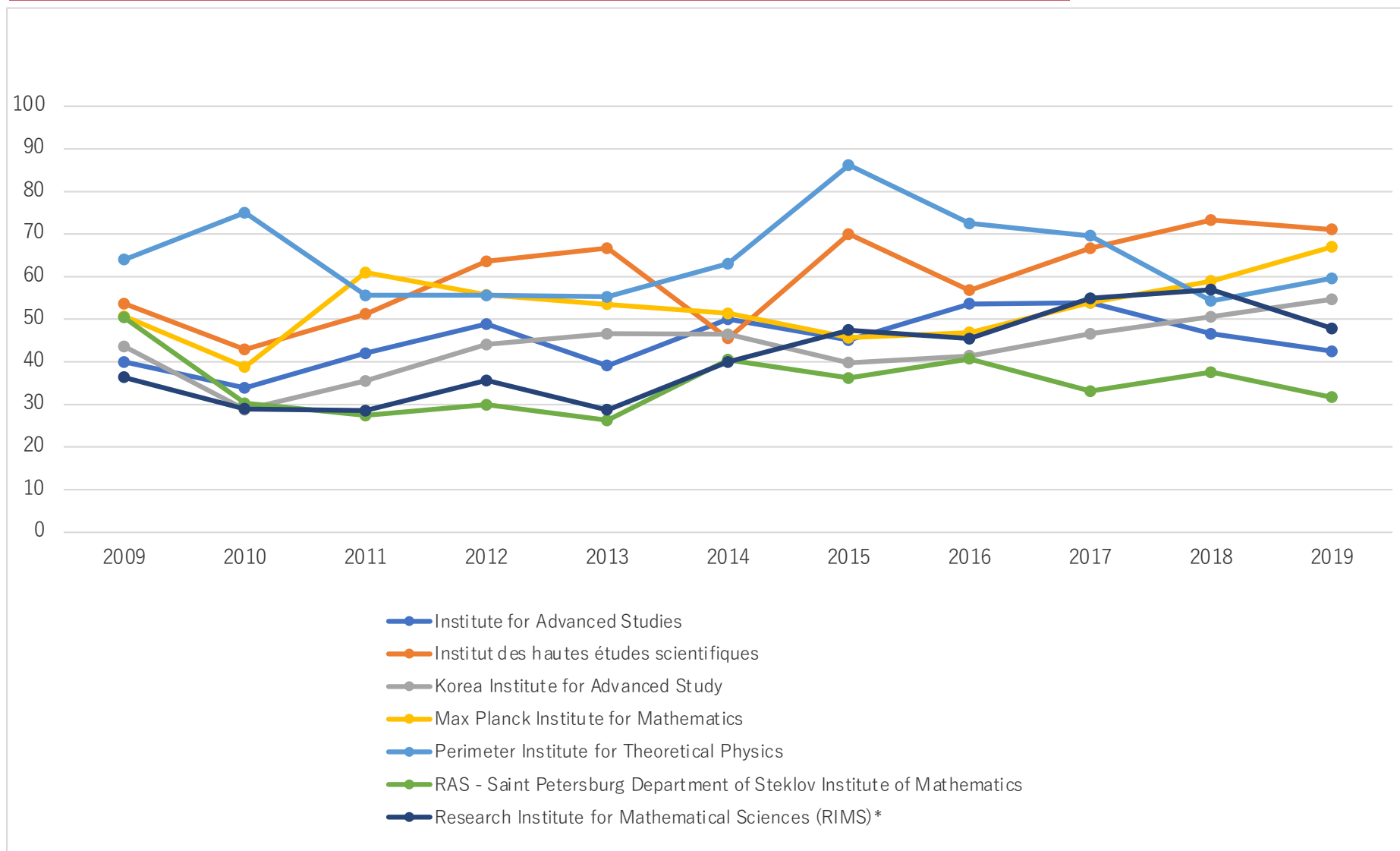
NOTE: Lists of Visiting Professors are attached in Section5-2 of “Self-Evaluation Report (December 2020)” .

# Published Papers

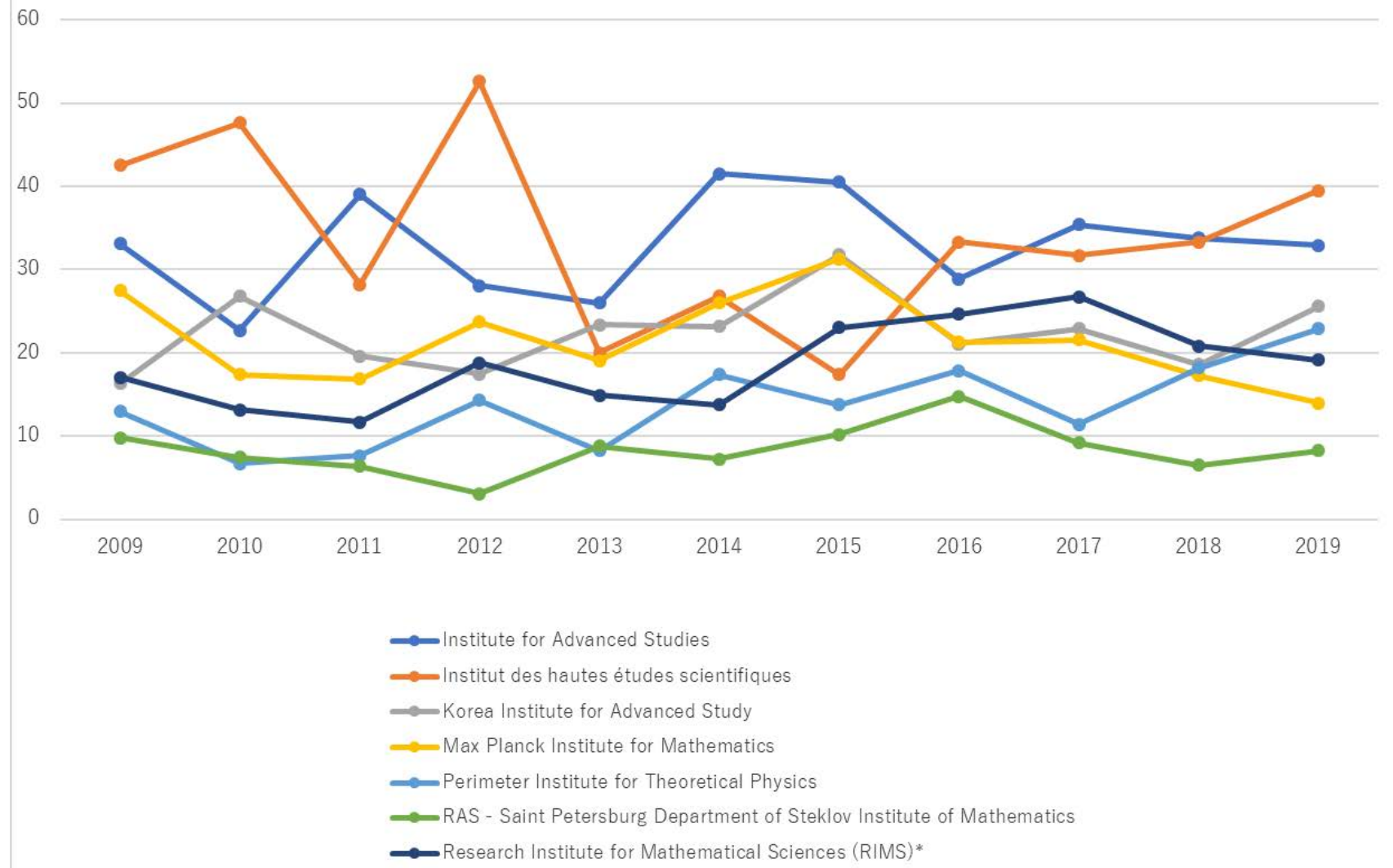
(#papers)



# Percentage of Internationally Coauthored Papers (Scopus)



## Percentage of Papers in Top 10% Journals (Scopus)





## The honors and prizes (1) 2012-2015

Year	Name	Position	Prize
2012, May	Kazushige TERUI	Associate Professor	RTA 2012 - 23rd International Conference on Rewriting Techniques and Applications Best paper award
2012, November	Takuro MOCHIZUKI	Professor	Osaka Science Award
2013, March	Tomoyuki Arakawa	Associate Professor	Mathematical Society of Japan, Algebra Prize
2013, October	Shinichi TANIGAWA	Assistant Professor	Hiroshi Fuiwara Encouragement Prize for Mathematical Sciences
2014, March	Hisashi OKAMOTO	Professor	JMSJ Best Paper Award 2014
2014, June	Hiraku NAKAJIMA	Professor	Kyoto University Shishi Prize
2014, July	Hiraku NAKAJIMA	Professor	Japan Academy Prize
2014, September	Michio YAMADA and Kenta ISHIMOTO	Professor & graduate student	Award for Outstanding Paper in Fluid Mechanics 2013
2015, March	Shin HITOTSUMATSU	Professor Emeritus	Mathematical Society of Japan, Publication Prize 2015

## The honors and prizes (2) 2015-2017

Year	Name	Position	Prize
2015, June	Kazuhisa MAKINO	Associate Professor	JSAI Incentive Award 2014
2015, June	Masatake MORI and Takuya OOURA	Professor Emeritus and Assistant Professor	4 <sup>th</sup> JSIAM Achievement Award
2015, September	Kazuhisa MAKINO	Associate Professor	FIT2015 Funai Best Paper Award
2016, March	Kenta ISHIMOTO	Project Assistant Professor	Young Scientist Award of the Physical Society of Japan 2016
2016, April	Ryoki FUKUSHIMA	Associate Professor	Young Scientists' Prize for Science and Technology by MEXT 2016
2016, October	Hisashi OKAMOTO	Professor	Hiroshi Fujiwara Prize on Mathematical Science
2016, December	Kazuhisa MAKINO	Professor	The 27 <sup>th</sup> International Symposium on Algorithms and Computation Best Paper Award
2017, January	Hiraku NAKAJIMA	Professor	The Asahi Prize
2017, February	Takashi KUMAGAI	Professor	Inoue Prize for Science

## The honors and prizes (3) 2017

Year	Name	Position	Prize
2017, February	Tatsuyuki HIKITA	Assistant Professor	Inoue Research Award for Young Scientists
2017, February	Kenta ISHIMOTO	Project Assistant Professor	Inoue Research Award for Young Scientists
2017, May	Shigefumi MORI	Project Professor	Foreign Member of the Russian Academy of Sciences
2017, May	Shigefumi MORI	Project Professor	National Academy of Sciences members and Foreign Associates
2017, May	Shigefumi MORI	Project Professor	Honorary Doctor of Science, University of Warwick
2017, August	Yutaka YOSHIDA	Project Assistant Professor	Particle Physics Medal: Young Scientist Award in Theoretical Particle Physics
2017, September	Tomoyuki ARAKAWA	Associate Professor	Mathematical Society of Japan, Autumn Prize
2017, September	Takashi KUMAGAI	Professor	Osaka Science Prize
2017, December	Takashi KUMAGAI	Professor	Humboldt Research Award

## The honors and prizes (4) 2018-2020

Year	Name	Position	Prize
2018, August	Masaki KASHIWARA	Project Professor	Chern Medal Award
2018, November	Masaki KASHIWARA	Project Professor	Kyoto Prize
2019, April	Tomoyuki ARAKAWA	Professor	Prize for Science and Technology by MEXT 2019
2019, September	Kazuhisa MAKINO	Professor	Operations Research Society of Japan Case Study Award
2020, February	Suguru ISHIKAWA	Assistant Professor	Inoue Research Award for Young Scientist
2020, April	Yusuke KOBAYASHI	Associate Professor	Young Scientists' Prize for Science and Technology by MEXT 2020
2020, July	Masaki KASHIWARA	Project Professor	The Order of the Sacred Treasure, Gold and Silver Star

## Members capable of attracting many international visitors

### - ICM Invited Speakers

2014 Seoul, Plenary : [Takuro MOCHIZUKI](#)

2014 Seoul, Probability and Statistics : [Takashi KUMAGAI](#)

2018 Rio de Janeiro, Lie Theory and Generalizations: [Tomoyuki ARAKAWA](#)

### - Invited Lectures

Aug. 2019 Germany (Oberwolfach),  $C^*$ -Algebras: Full factors and co-amenable inclusions [Narutaka Ozawa](#)

Sep. 2019 Germany, 50 Years of Math. at Bielefeld: Anomalous random walk and diffusion: from fractals to random media [Takashi Kumagai](#)

Sep. 2019 Japan, Annual Meeting of JMSJ: Harmonic bundles, Monopoles and Instantons [Takuro Mochizuki](#)

Nov. 2019 China, The third Pan-Pacific Inter. Conf. on Topology and Applications: Floer cohomology and covering spaces [Kaoru Ono](#)

Feb. 2020 France, Thematic trimester program on Representation theory: Introduction to vertex algebras [Tomoyuki Arakawa](#)

[And many others.](#)

## Three Affiliated Research Centers

These Centers has **no allocated funds**, and the **budgetary request** is being made.

### **Center for Research Interaction in Mathematical Sciences** (2012- )

This center was founded for the purpose of promoting research exchange between excellent researchers from inside and outside Japan by providing them with an environment for collaborative research.

### **Liaison Center in Mathematics** (2013- )

This center was founded for the purpose of conducting collaborative research with researchers from other academic fields and with companies, this center was founded. Its mission is the application of mathematics.

### **Center for Research in Next-Generation Geometry** (2019- )

This center was founded for the purpose of promoting research in a broad range of areas of next generation geometry, with a special emphasis on arithmetic geometry in general and inter-universal Teichmüller theory in particular.

NOTE: Details of each center are described in Section 7 of “Self-Evaluation Report (December 2020)” .

# International Academic Exchange Agreements (1)

## 【 GlobalMathNetwork 】

- Hausdorff Center for Mathematics, University of Bonn
- Department of Mathematics and their Applications, École Normale Supérieure
- Courant Institute of Mathematical Sciences, New York University
- Beijing International Center for Mathematical Research, Peking University

## 【 Canada 】

- Pacific Institute for the Mathematical Sciences

## 【 Federal Republic of Germany 】

- Hausdorff Center for Mathematics, University of Bonn

## 【 Republic of Korea 】

- Korea Institute for Advanced Study
- Department of Mathematical Sciences, Seoul National University
- National Institute for Mathematical Sciences
- The CAU Nonlinear PDE Center, Chung-Ang University
- The Center for Geometry and Physics, Institute for Basic Science

## International Academic Exchange Agreements (2)

### 【Russian Federation】

- Higher School of Economics, National Research University

### 【Taiwan】

- National Center for Theoretical Sciences

### 【United Kingdom】

- University of Edinburgh

### 【United States of America】

- College of Science, University of Utah

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### 【Japan】

- Advanced Institute for Materials Research (Tohoku University)
- Osaka City University Advanced Mathematical Institute
- International Institute for Advanced Studies

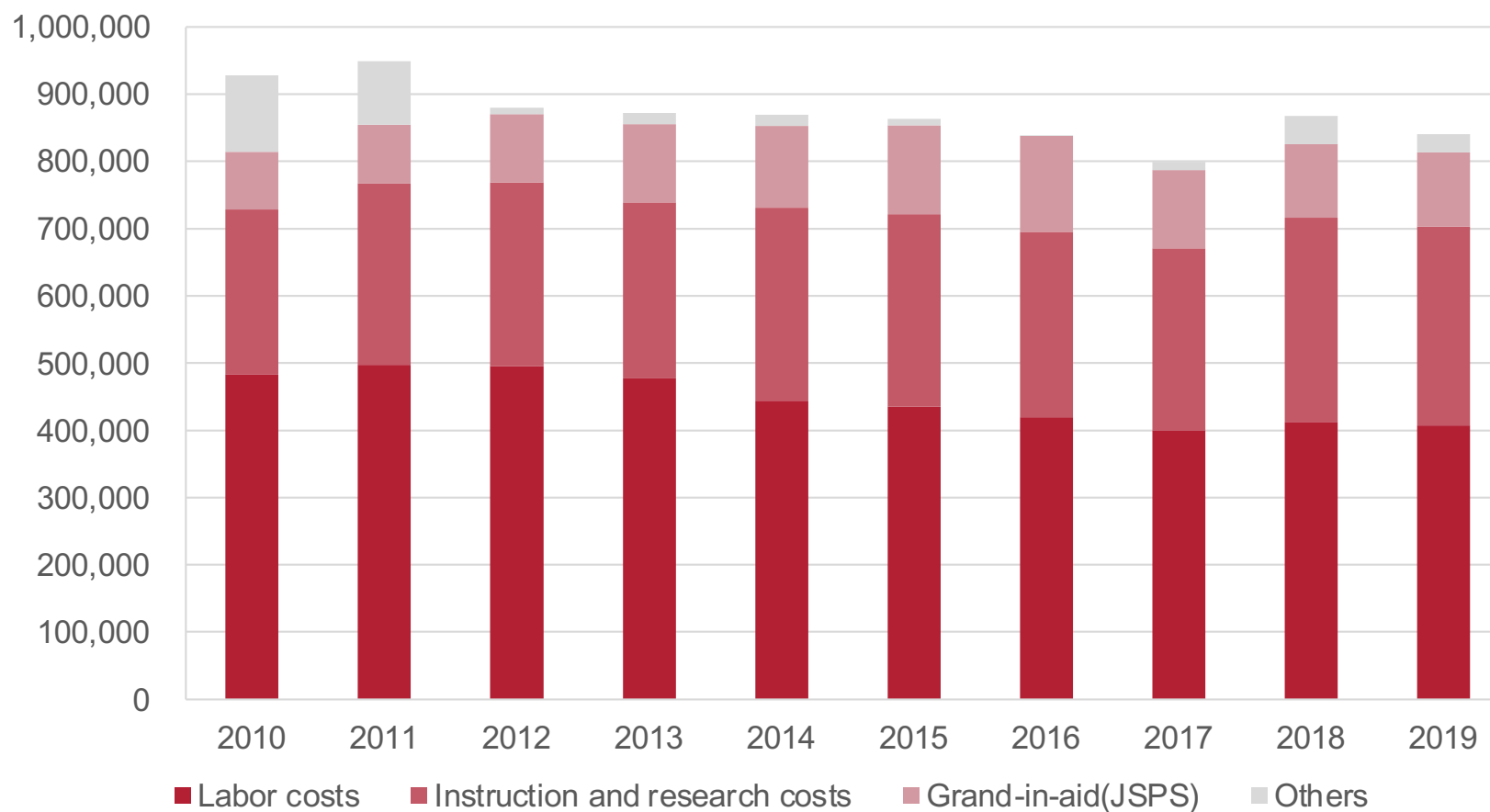


# Budget

Total Budget (K yen) including salaries for regular staffs

2017	2018	2019
799,512	867,463	840,233

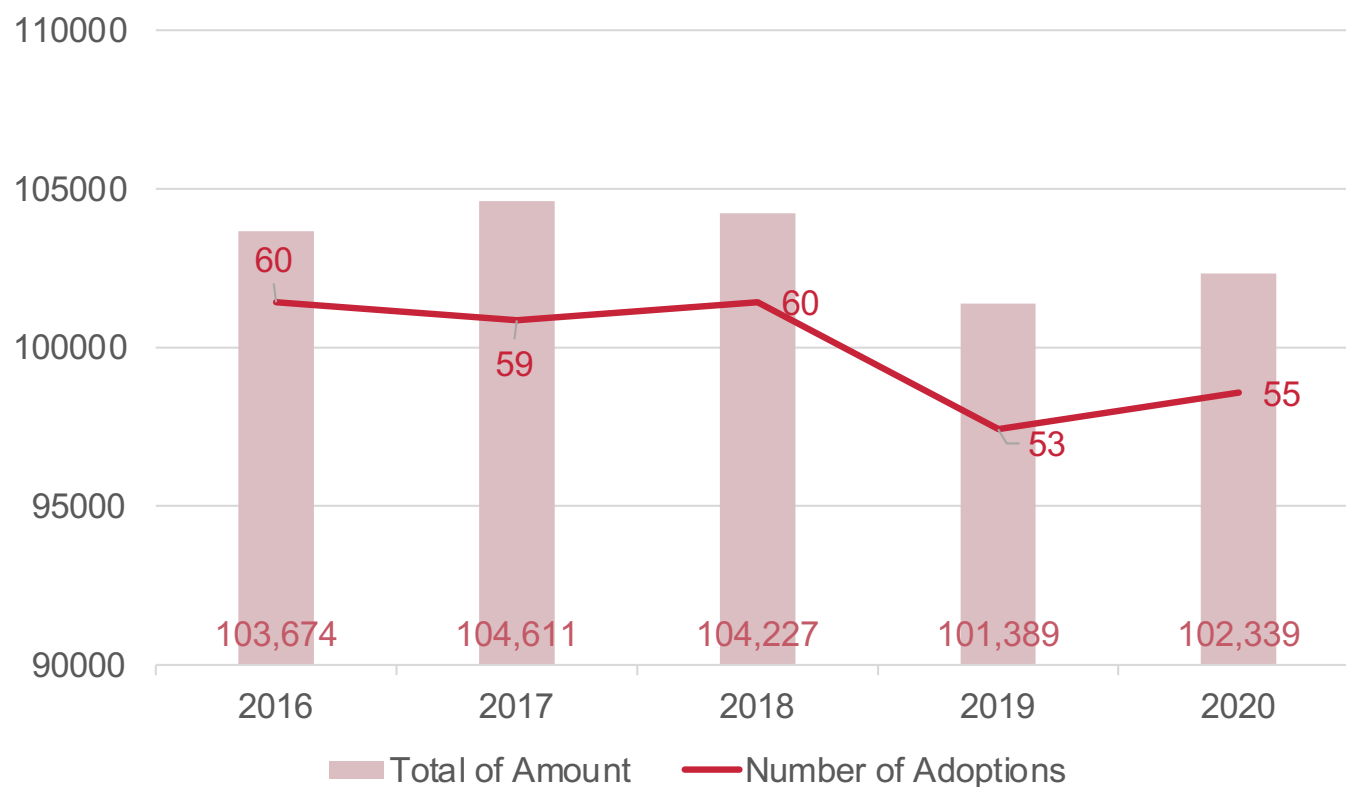
In rough figures,  
US\$ 7.68M to 8.34M  
AU\$ 10.38M to 11.26M



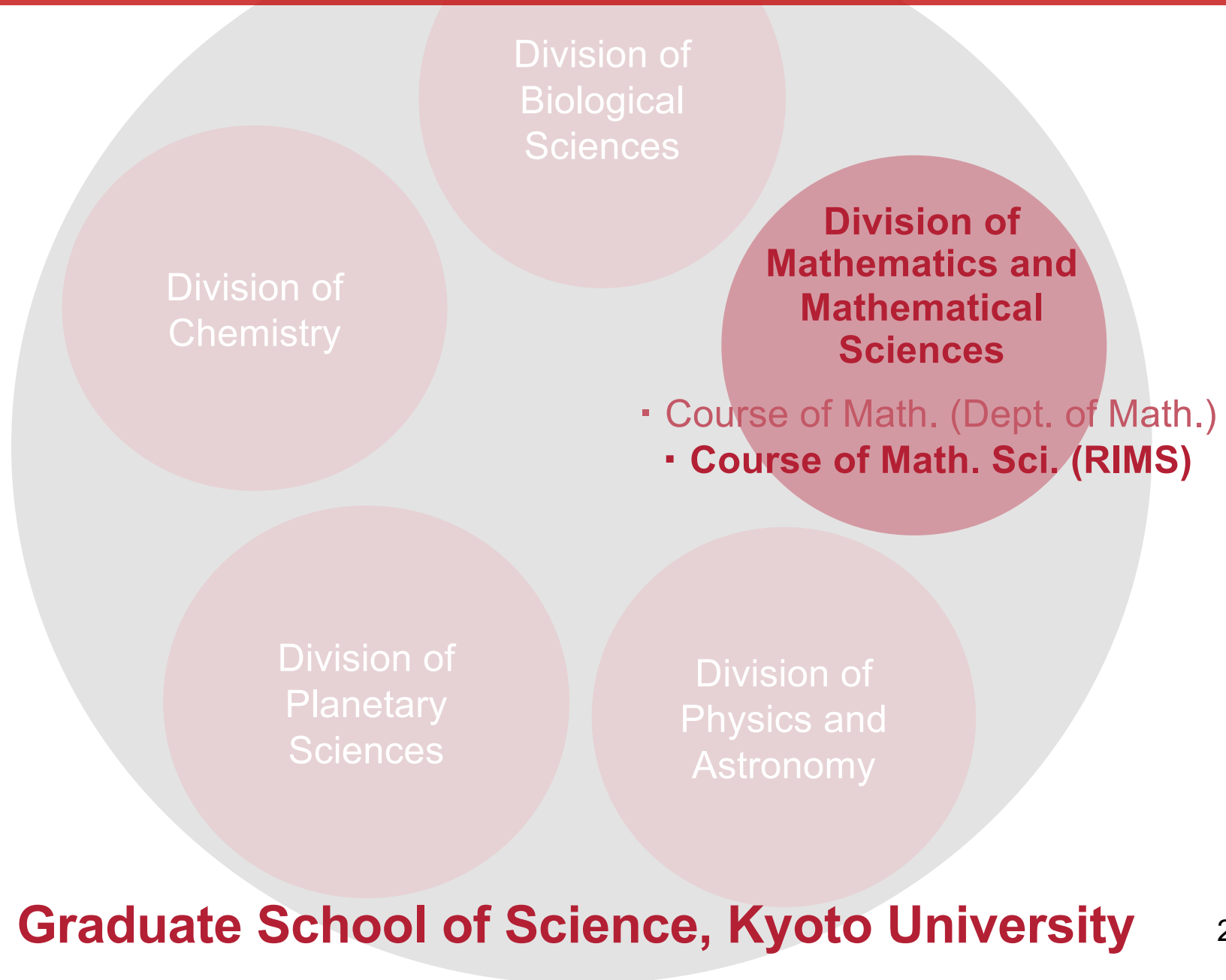
# Grants-in-Aid for Scientific Research

(K yen)

Year	2016	2017	2018	2019	2020
Total of Amount	103,674	104,611	104,227	101,389	102,339
Number of Adoptions	60	59	60	53	55



## 2. As a Graduate School



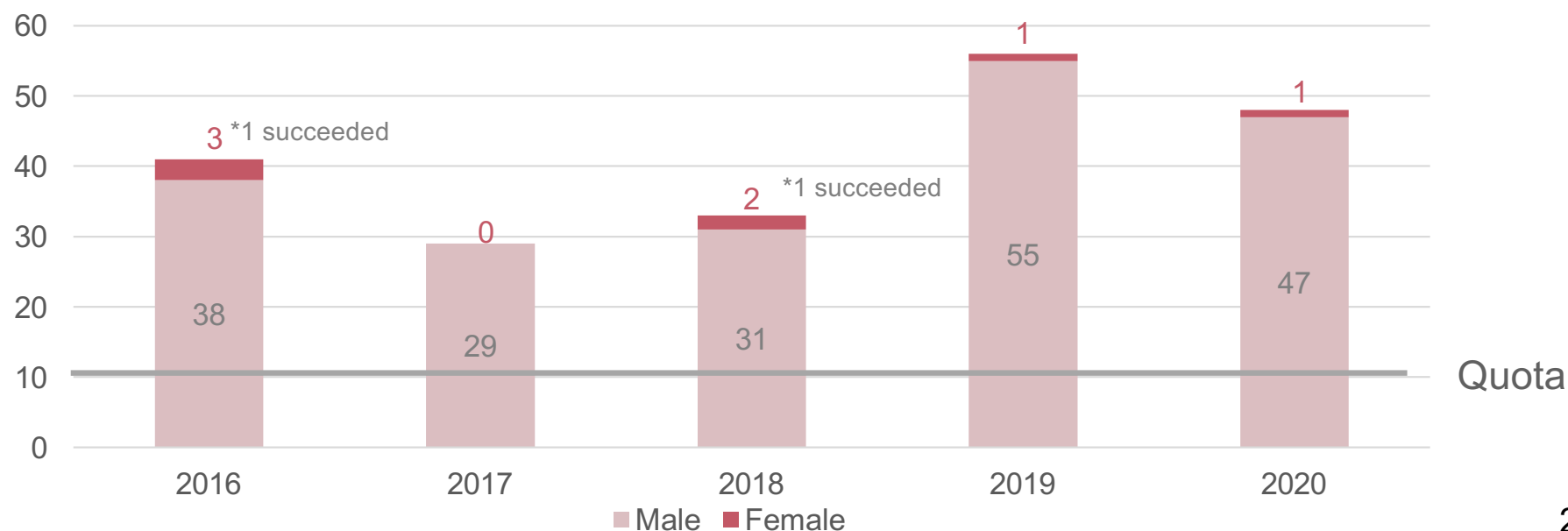
# Course of Mathematical Sciences

## Student body

M1	M2	D1	D2	D3	D4	Total	Research Student, RIMS
11 (1)	10 (2)	8 (0)	5 (0)	7 (0)	2 (0)	43 (3)	5 (4)

\*( ) indicates the number of international students. Unfortunately, no female students in this year.  
Student quota is 10 per a year both for the master and the doctor courses.

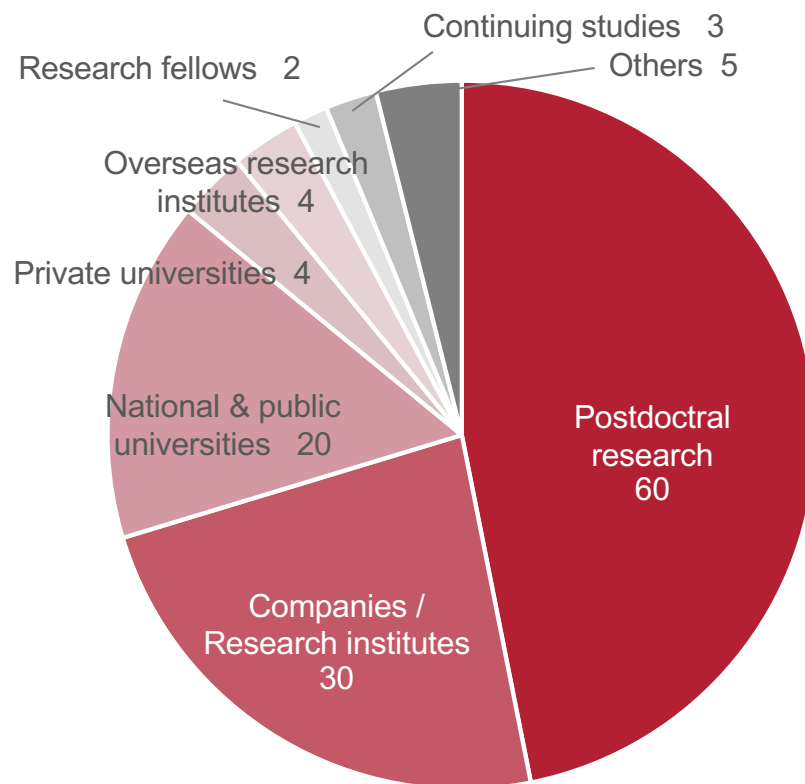
## Number of the examinees of entrance examination of master course



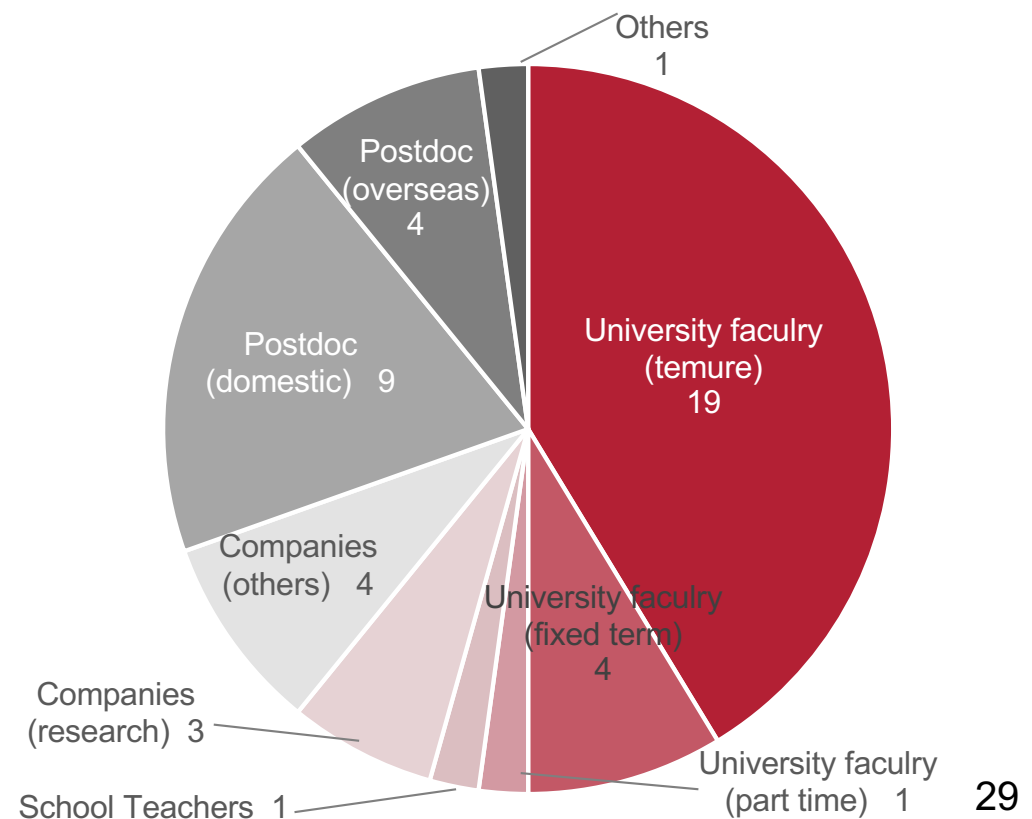
## Carrier after Completing the Course

The students who completed the Mathematical Science course will be awarded Master or Ph.D (in Science) from Kyoto University. RIMS (as Math. Sci. course) has awarded 130 course doctors and 51 doctoral dissertation since 1994.

First carrier of Ph.D Holders  
since 1995 to 2019



Current state of Ph.D Holders  
awarded 2010 to 2019



## KTGU Project (1)

In 2014, Japanese Government launched a funding project that aims to enhance the international comparability and competitiveness of higher education. **Kyoto University Top Global Program (KTGU)** was selected as one of the projects to lead the internationalization of Japanese universities.

### Project Activities

#### - Distinguished Visiting Professors

The Math. Unit invites excellent researchers from abroad, including Fields Medalists. They instruct PhD students in Kyoto Univ. and give a special lecture with a credit during their stay of more than one month.

2019: **FEIGIN, Boris** (HSE, Russia) / **POPA, Sorin** (UCLA, USA) /  
**CHEN, Zhenqing** (Univ. of Washington, USA)

2018: **RIVERO, Víctor** (CIMAT, Mexico) / **FEIGIN, Boris** (HSE, Russia) /  
**CHEN, Huayi** (Paris Diderot, France) /  
**HACON, Christopher** (Univ. of Utah, USA)

### - Sub-supervisors for Ph.D students

Most appropriate professors are selected from abroad. The supervision are made by visiting or inviting the supervisors.

Year	2015	2016	2017	2018	2019
Students who completed the course	3	7	5	9	1

### - Support for Ph.D students to travel abroad

The Math. Unit supports to visit the sub-supervisor for discussions and receiving supervisions.

Year	2014	2015	2016	2017	2018	2019
Student	7	22	17	19	13	15
University	11	21	22	23	18	23
Country	6	9	12	7	7	13

### - KTGU Mathematics Workshop for Young Researchers

### - Special Teaching Assistant (STA) \*Financial support for the students

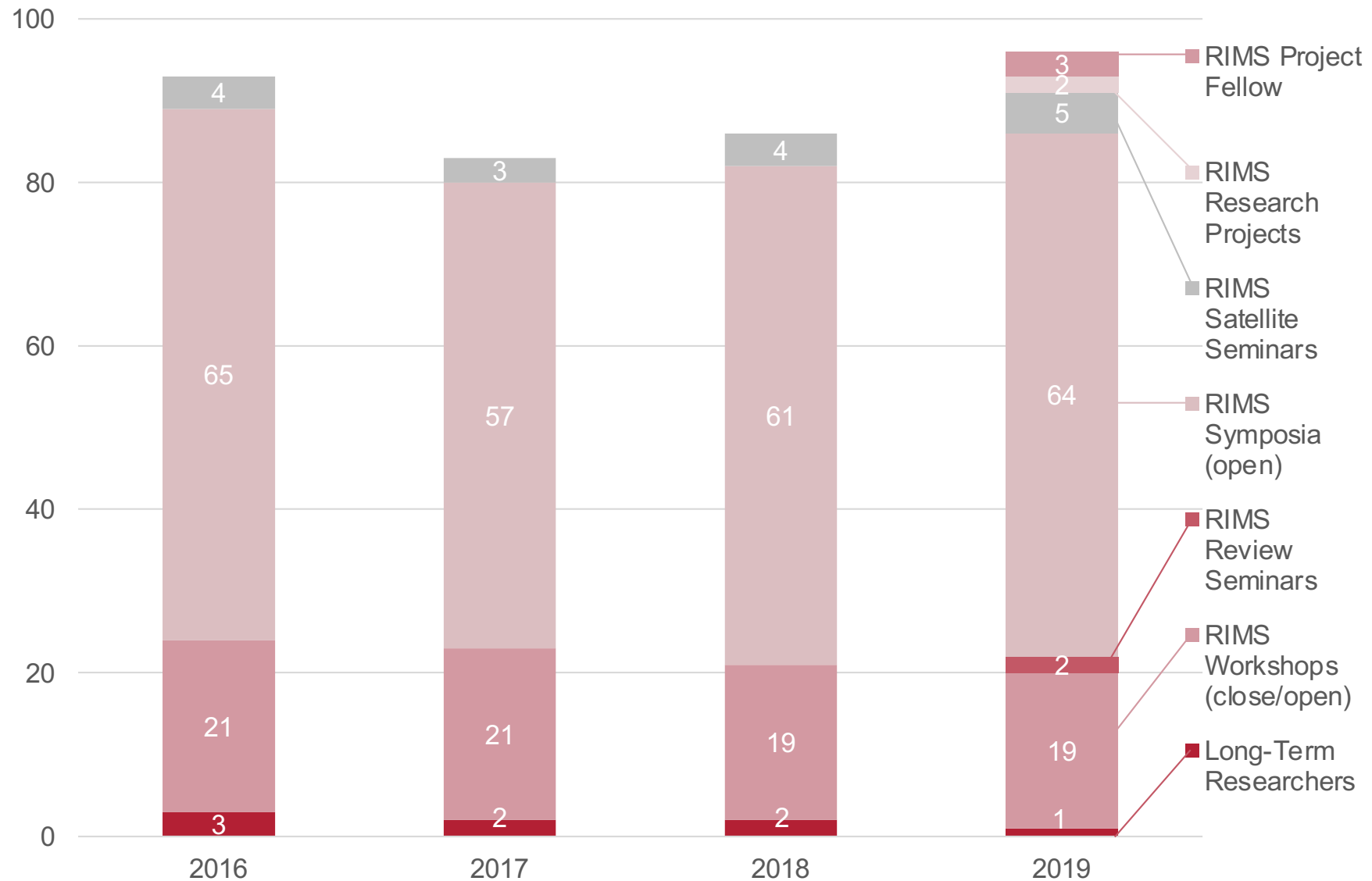
### - Accepting international students from abroad

### 3. As a International Joint Usage/ Research Center (JU/RC)

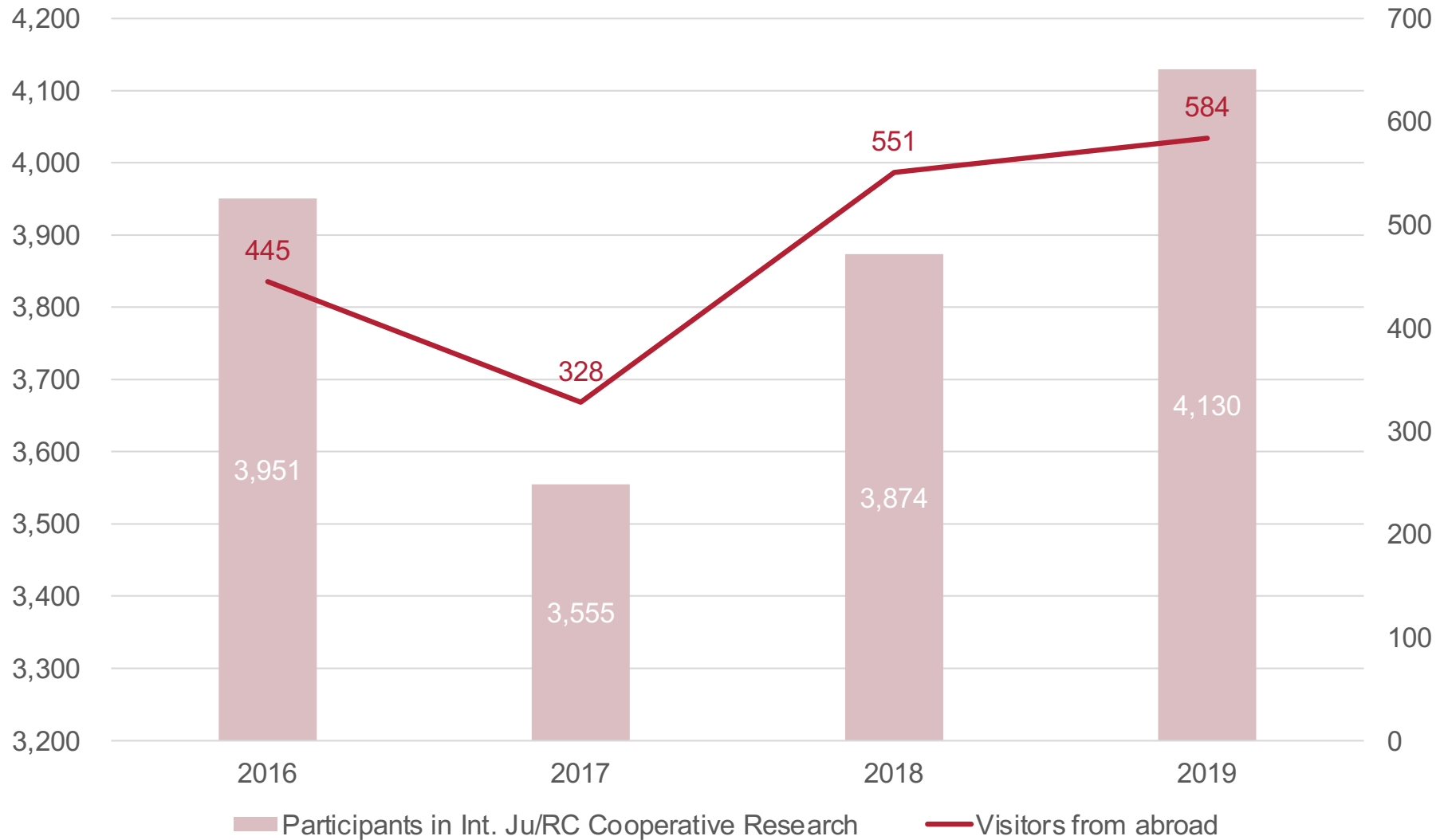
- Each JU/RC has to be authorized **every six years**.
- Funds are allocated by the Government for carrying out cooperative research.
- Proposals are made annually from throughout Japan (some from abroad).
- Screened by Advisory and Technical Committees (their members are chosen on the basis of recommendations of the Science Council of Japan).
- **Five categories of cooperative research**
  - Workshops (open/closed, international call for proposals)
  - Symposia (open, international call for proposals)
  - Satellite seminars (closed, international call for proposals)
  - Review seminars (open/closed, international call for proposals)
  - Long-term visiting researchers (2 weeks – 1 year)  
(and RIMS Research Projects (since 1991, international call for proposals))



# Projects of Int. JU/RC Joint Research Activities by Category



# Visitors to RIMS



The number of visitors from abroad includes those who are not participating in Int. JU/RC cooperative research activities.

## Visitors from Overseas and Their Home Countries

Year Country	2016	2017	2018	2019
Australia	14	7	17	17
Canada	12	8	17	23
China	44	36	42	56
Denmark	2	3	2	3
France	40	36	54	57
Germany	37	24	57	31
India	3	2	2	4
Italy	10	7	15	16
Korea	34	33	49	68
Russia	8	4	16	8
Sweden	3	8	2	2
U.K.	34	28	25	43
U.S.A.	98	53	90	111
Others	106	79	123	145
<b>Total</b> (people)	<b>445</b>	<b>328</b>	<b>511</b>	<b>584</b>

# RIMS Research Projects (1) (since 1991)

## 2018 Vertex Operator Algebras and Symmetries

- 10th CFT Seminar: A Conference on Vertex Algebras and Related Topics

Period : 2018-04-23--2018-04-27    Participants : 48    International participants : 26

- Vertex Operator Algebras and Symmetries

Period : 2018-07-09--2018-07-13    Participants : 35    International participants : 23

- Vertex operator algebras and conformal field theory

Period : 2018-07-02--2018-07-06    Participants : 52    International participants : 29

## 2019 Cluster Algebras

- Cluster algebras: theory and applications

Period: 2019-06-03--2019-06-07    Participants : 112    International participants : 56

- Cluster algebras and representation theory

Period: 2019-06-10—2019-06-14    Participants : 132    International participants : 68

- Cluster algebras, geometry, and mathematical physics

Period: 2019-06-17--2019-06-21    Participants : 144    International participants : 76

## RIMS Research Projects (2) (since 1991)

### 2019 Discrete Optimization and Related Topics

- Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications  
Period: 2019-05-27--2019-05-30    Participants : 117 **International participants : 41**
- Discrete Structures in Phylogenetic Networks (closed)  
Period: 2019-07-14--2019-07-20    Participants : 5 **International participants : 2**
- International Workshop on Innovative Algorithms for Big Data 2019  
Period: 2019-10-30--2019-11-01    Participants : 81 **International participants : 10**
- International Workshop on Combinatorial Optimization and Algorithmic Game Theory  
Period: 2020-01-13--2020-01-14    Participants : 41 **International participants : 7**
- Combinatorial Optimization and Algorithms (RIMS Research Project 2019)(closed)  
Period: 2020-01-15--2020-01-20    Participants : 7 **International participants : 4**

## Satellite Seminars (1)

Closed small-scale (Called "RIMS Satellite seminars") on a higher and focused subject, taking a few days to a week at the same place (anywhere in Japan), with around 20 participants including leading international researchers and young researchers.

The number of participants can be more than 20 if the seminar is aimed at fostering young researchers.

Since 2017, Satellite seminars is open to international call for proposals.

## Satellite Seminars (2) 2017-2019

1. Commutative Algebra and Related Topics, 2017.5.22--6.2
2. Workshop on linear and nonlinear dispersive equations and related topics, 2017.5.22--5.25
3. Large scale properties of partial differential equations with random coefficients, 2017.8.7--8.11
4. Large scale properties of partial differential equations with random coefficients, 2017.8.30--9.3
5. Vertex operator algebras and conformal field theory, 2018.7.2--7.6
6. Japan-Taiwan Joint Conference on Number Theory, 2018.9.2--9.7
7. Mathematical science in numerical modeling and data assimilation of Martian atmosphere, 2019.3.18--3.20
8. Mathematical science in numerical modeling and data assimilation of planetary atmospheres from Earth and Mars to Venus, 2019.3.20--3.23

## Satellite Seminars (3) 2017-2019

- 9. On the problem of resolution of singularities and its vicinity, 2019.6.1--6.4
- 10. Quiver Hecke algebra and its applications to topology, 2019.7.7--7.11
- 11. Physical and mathematical approaches to geophysical fluid problems, 2019.9.7--9.9
- 12. Pattern formation and defects in biology and materials science, 2019.10.8--10.11
- 13. Application of techniques based on mathematical science to the biofluid mechanics, 2019.10.28--10.30



# Budget for Int. JU / RC

RIMS budget  
(Exclusive of labor budget)

K Yen

160,000

140,000

120,000

100,000

80,000

60,000

40,000

20,000

0

2016

2017

2018

2019

55314

31,677

37,235

54429

31,677

37,066

52701

54144

27429

51858

58819

39310

JU/RC

Competitive fund

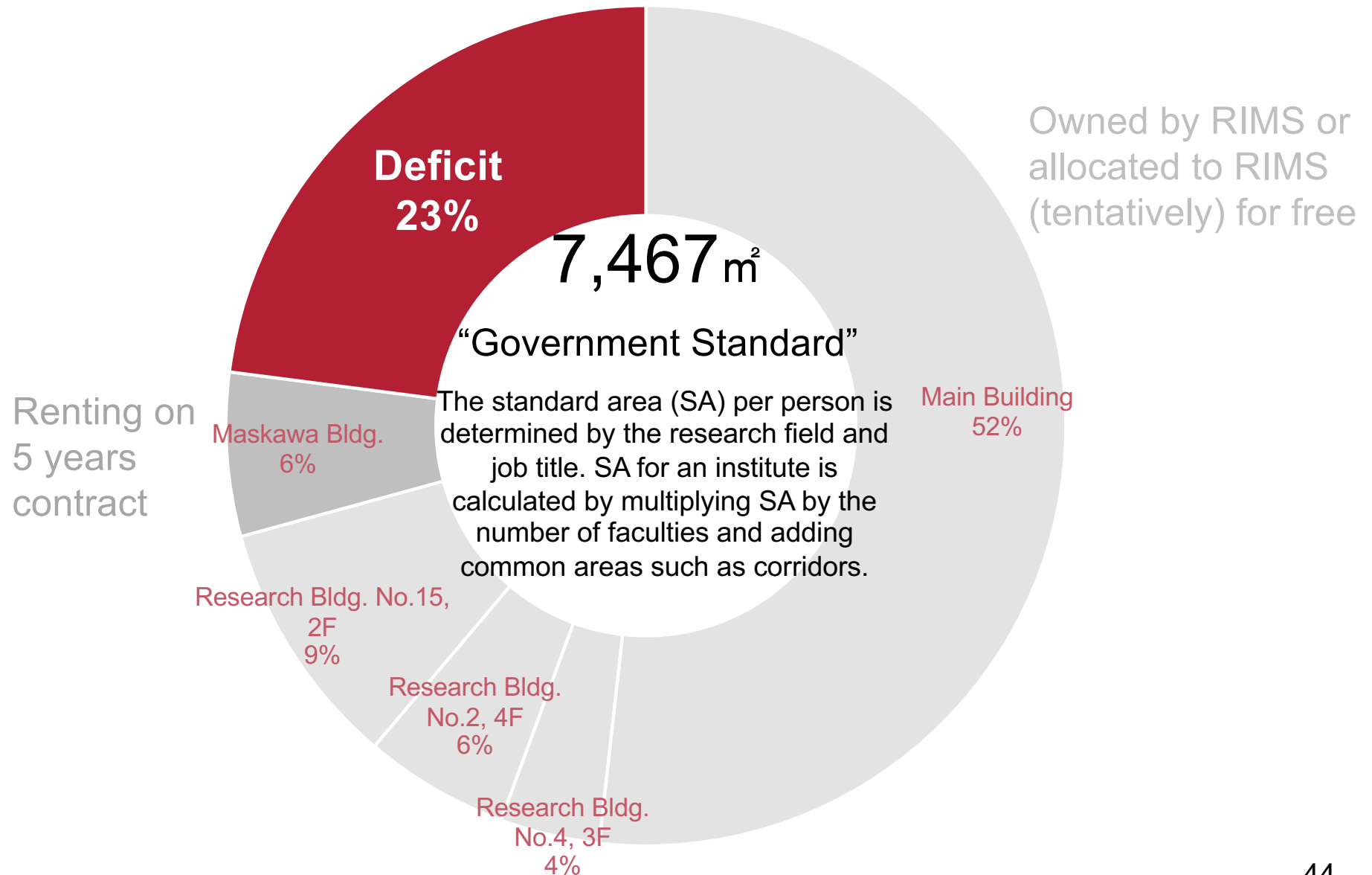
## 4. Supporting Facilities and Activities

- Office Space (crucial)
- Accommodations
- Research Support Sections
- Library
- Publications
  - “RIMS Kôkyûroku”
  - New Lecture Notes Series “RIMS Kôkyûroku Bessatsu”
  - Publications of RIMS
  - RIMS Preprint Series

## Office Space and Accommodations

Section	Land	Building	
		Built Area	Floor Space
RIMS Main Building	m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>
	1,310	777	<b>3,866</b>
Research Bldg. No.4, 3F			<b>286</b> (8 rooms)
Research Bldg. No.2, 4F			<b>417</b> (8 rooms)
Research Bldg. No.15, 2F			<b>714</b> (11 rooms)
Maskawa Bldg. (North Comprehensive Education and Research Building)			<b>470</b> (8 rooms)
<b>Total</b>			<b>5,810</b>
Kita Shirakawa Guest House (Shared by RIMS and Yukawa Institute)			453
			(6 rooms for RIMS)

# Required space according to the “Government Standards”



## Office Space of RIMS Members

	Number of rooms	Maximum number of people per room	Dimension per person on average (in max. number)
Prof., Assoc. Prof. & Lecturers (Incl. Project Prof.)	35	1	23.7 m <sup>2</sup>
Assistant Professors	7	2	11.6 m <sup>2</sup>
Visiting Professors	7	2	15.0 m <sup>2</sup>
Researchers & Visiting Researchers	8	3-9*	9.1 m <sup>2</sup>
Students	6	5-12*	4.9 m <sup>2</sup>

\* We arrange as dispersed an allocation as is possible.  
However, some rooms are full or close to full.

# Scattering Locations of RIMS



## Accommodations

- **Kyoto University International House**

Housing for visitors to Kyoto University

7 International Houses are facilitated (2 are only for the students).

- **Kitashirakawa Guest House (Kitashirakawa Gakusha)**

For visitors to RIMS or Yukawa Institute for Theoretical Physics (YITP) only, and very reasonable (3,300 JPY/day), but only for 6 persons.

- **Other accommodations**

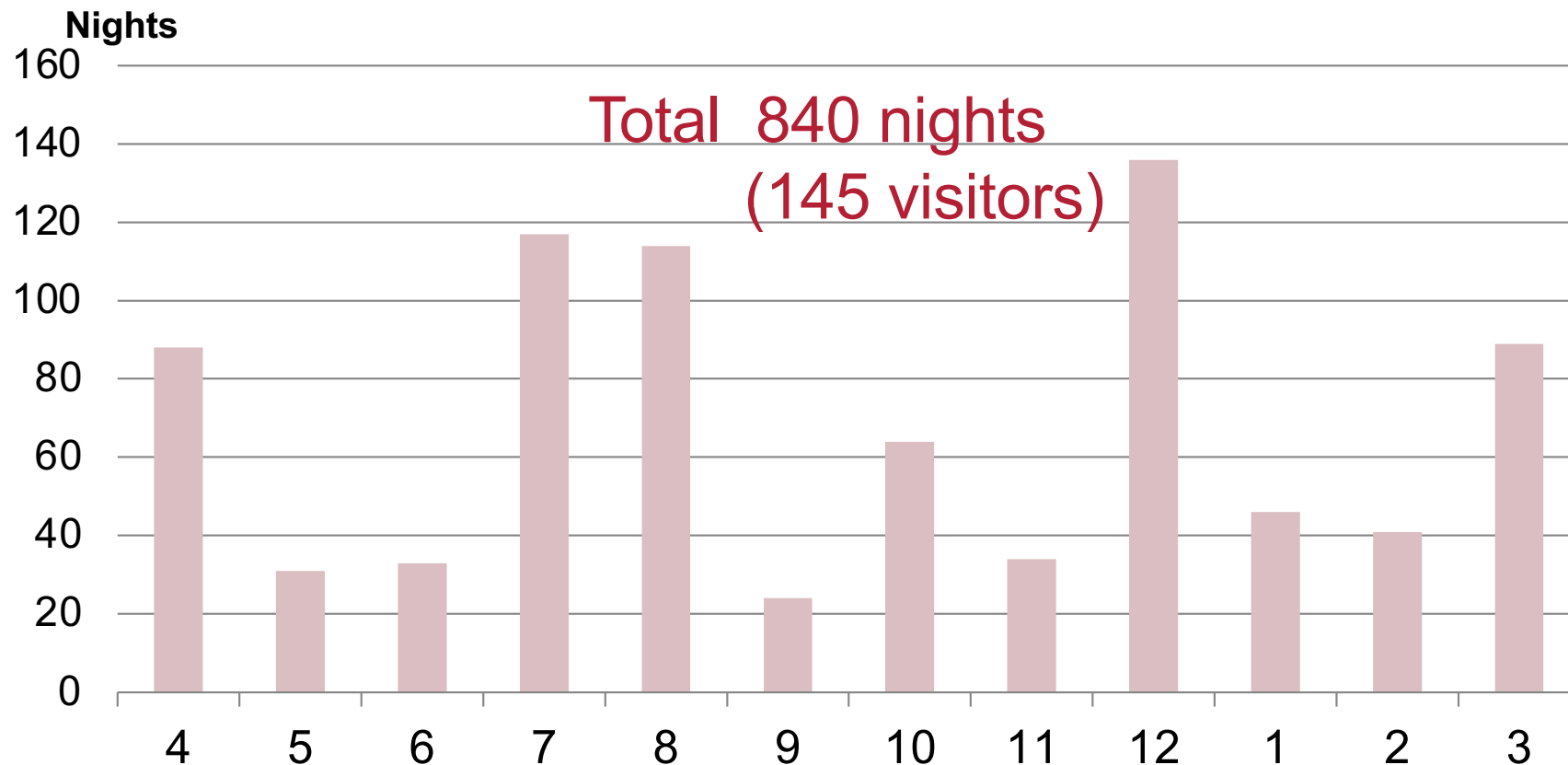
The staffs of International Research Support Office (RIMS) arrange hotels or apartments for longer stay for visitors.



## Kitashirakawa Guest House

RIMS, jointly with the Yukawa Institute of Theoretical Physics, provides inexpensive accommodations.

### Number of International visitors in month 2019 (RIMS)





## Research Support Sections

- **Cooperative research service section**

This section supports cooperative research activities including accounting and various publications.

- **Secretariat**

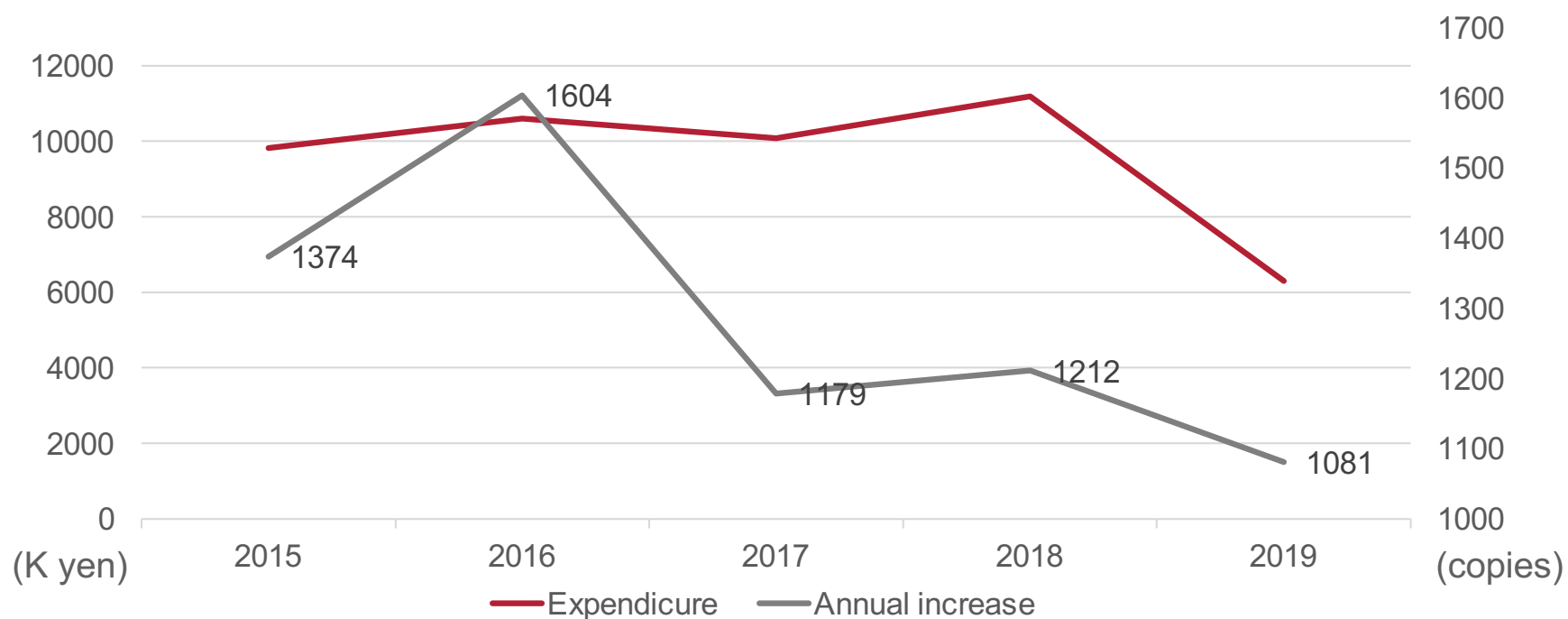
A section which provides secretarial services for the RIMS members and deals with the Publications and preprints. The website of RIMS (<http://www.kurims.kyoto-u.ac.jp>) is maintained by this section.

- **International Research Support Office**

This office handles international relations and offers secretarial services to overseas visitors as well as to those who attend the international symposia or workshops held at RIMS.

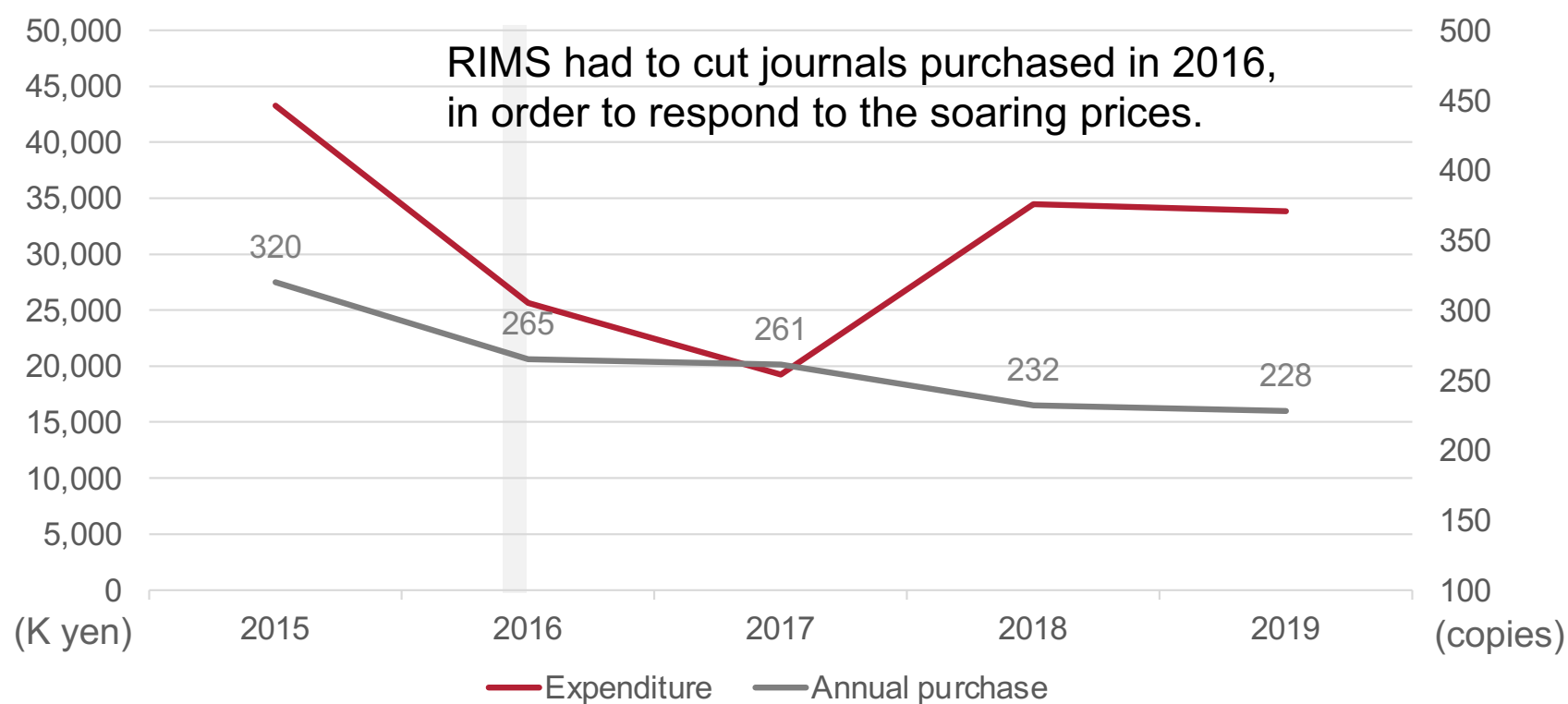
## Library (Books)

	2015	2016	2017	2018	2019
Annual increase (copies)	1,374	1,604	1,179	1,212	1,081
Expenditure of books purchased (K yen)	9,820	10,605	10,076	11,191	6,302
Collection books (copies)	101,519	102,875	103,744	104,923	105,992



## Library (Journals)

	2015	2016	2017	2018	2019
Annual purchase	320	265	261	232	228
Expenditure of books purchased (K yen)	43,269	25,622	19,247	34,457	33,830



## Publications (1) RIMS Kôkyûroku

Kôkyûroku has been issued as the records for lectures concerning (Int.) JU/RC activities in RIMS. The series first appeared in 1964, and about 50-60 volumes are issued each year.

### Number of volumes (as of Nov. 2020)

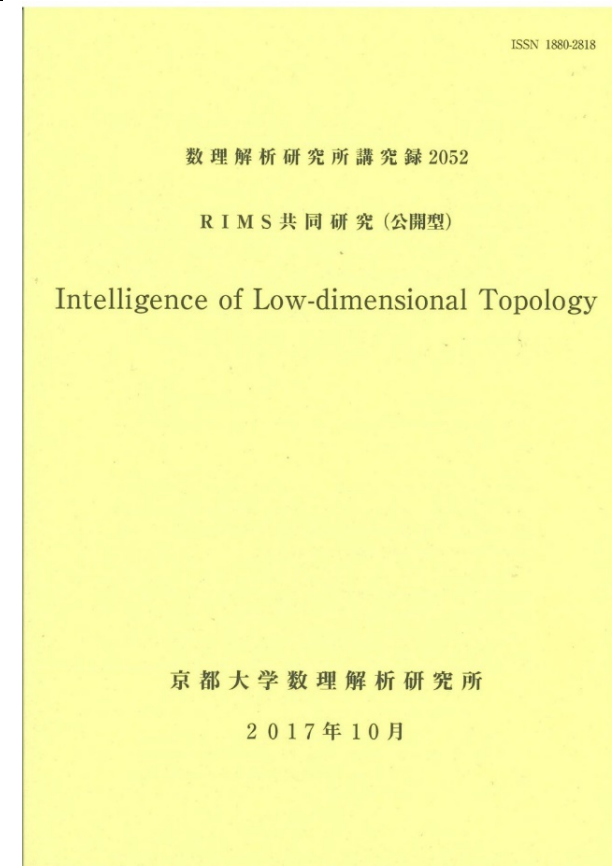
Year	2017	2018	2019	2020
Volumes	46	46	44	23
Papers	687	707	679	343

**2,172** volumes have been published in total from 1964.

### Online publication

- Kyoto University Research Information Repository (KURENAI) <https://repository.kulib.kyoto-u.ac.jp/dspace/>
- RIMS web site

<http://www.kurims.kyoto-u.ac.jp/~kyodo/kokyuroku/kokyuroku.html>



## Publications (2)

### RIMS Kôkyûroku Bessatsu (ISSN: 1881-6193)

RIMS Kôkyûroku Bessatsu is another series of the record for lectures. The Advisory Board of RIMS selects about 10 conferences for this new series every year. Manuscripts are refereed, and papers are cited in MathSciNet.

#### Number of volumes

(as of Oct. 2020)

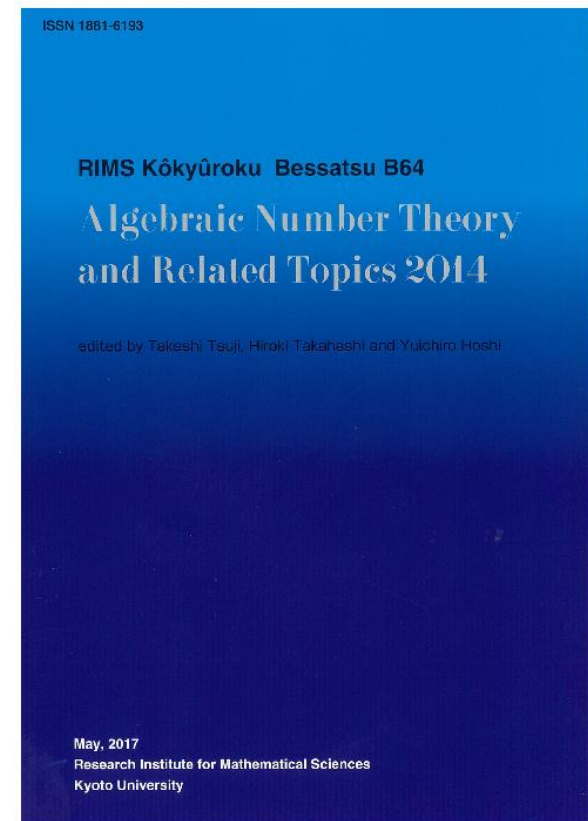
Year	2017	2018	2019	2020
Volumes	7	4	4	7
Papers	83	55	31	89

**83** volumes have been published in total from 2006.

#### Online publication

- Kyoto University Research Information Repository (KURENAI) <https://repository.kulib.kyoto-u.ac.jp/dspace/>
- RIMS web site

<http://www.kurims.kyoto-u.ac.jp/~kyodo/kokyuroku/kokyuroku.html>



## Publications (3) Publications of RIMS (on-line versions and special issues)

### European Mathematical Society Publishing House

Vol. 46 (2010)--

<http://www.ems-ph.org/journals/>

**RIMS** Vol. 41 (2005)-- Vol. 45 (2009)

<http://www.kurims.kyoto-u.ac.jp/>

**J-STAGE** Vol. 1 (1965)-- Vol. 40 (2004)

<http://www.journalarchive.jst.go.jp/japanese>

### Some special Issues

“Dedicated to Professor Heisuke Hironaka on  
the Occasion of His “Kiju”, that is, His 77th Birthday”

(Vol.41, No.4, December 2005, 186 pp, 10 articles)

“Arithmetic Algebraic Geometry”

(Vol.45, No.1, March 2009 , 227 pp, 7 articles)

“The Golden Jubilee of Algebraic Analysis”

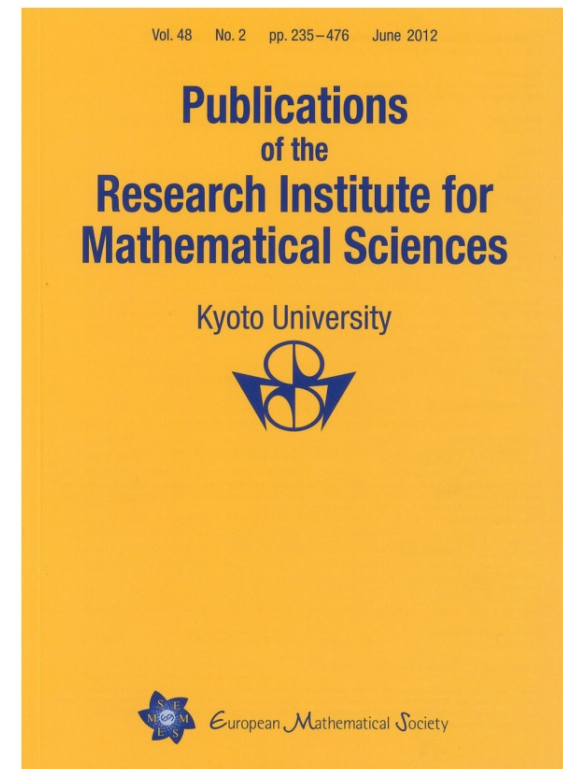
(Vol.47, No.1 March, No.2 June 2011, 670 pp, 18 articles)

“Inter-universal Teichmüller Theory”

(Vol.57, No.1, No.2, 2021, TBA, 4 articles)

“Dedicated to Professor Masaki Kashiwara on  
the Occasion of His 70th Birthday”

(Vol.57, No.3, No.4, 2021, TBA, 14 articles)



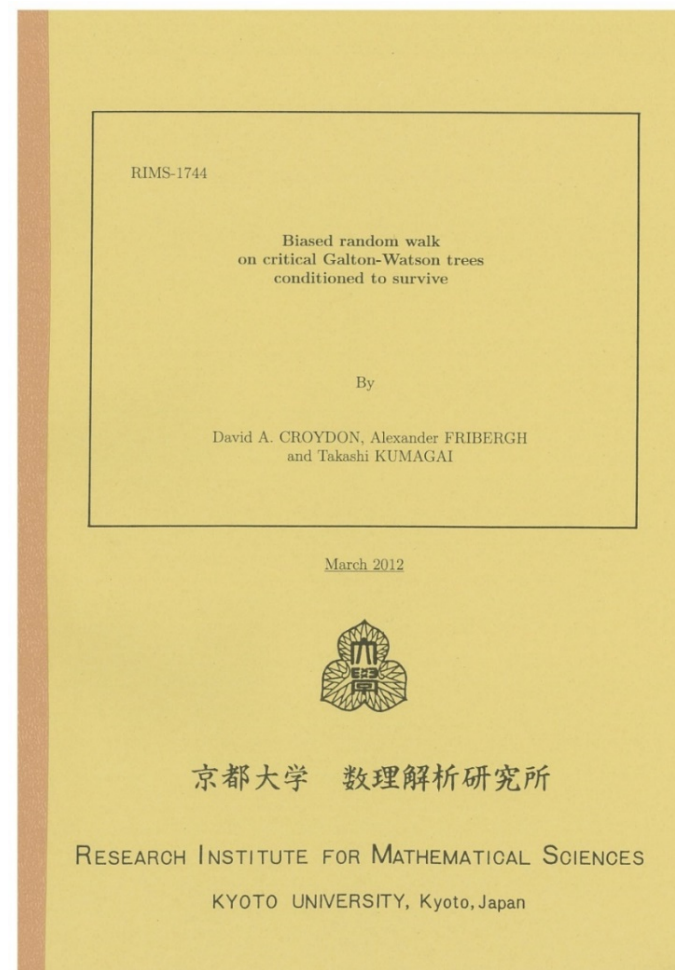
## Publications (4)

### RIMS Preprint (Since 1964)

Year	Issues
2012	29
2013	27
2014	19
2015	30
2016	26
2017	15
2018	15
2019	13
2020	25

Digitized and available on Kyoto University  
Research Information Repository (KURENAI) from 2020.

<https://repository.kulib.kyoto-u.ac.jp/dspace/>



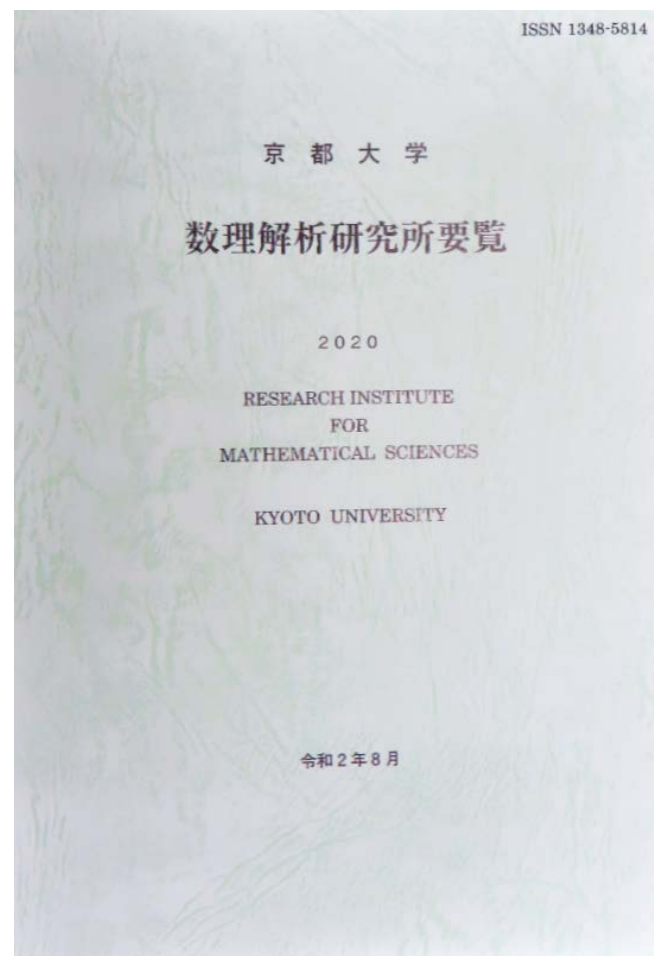


## Publications (5) Bulletin



Brochure (EN / JP)

[http://www.kurims.kyoto-u.ac.jp/~kenkyubu/gaiyou/RIMS20-21\\_en.pdf](http://www.kurims.kyoto-u.ac.jp/~kenkyubu/gaiyou/RIMS20-21_en.pdf)



Annual Report (JP only)

<http://www.kurims.kyoto-u.ac.jp/~kenkyubu/youran2020.pdf>



## 5. Outreach activities

### Introductory Public Lecture

Introductory Public Lecture has been held almost every summer for 5 days since 1976, featuring around three topics based on the results of mathematical science research selected from various aspects.

39 <sup>th</sup> (2017)	110 participants (408 in total)	G. Yamashita	Prime number theorem and Riemann's zeta function
		Y. Isono	Introduction nonstandard analysis - Mathematics of hyperreal numbers and infinity
		T. Kawai	ADE generalization of the quintuple product formulas – From the viewpoint of field theory
40 <sup>th</sup> (2018)	108 participants (397 in total)	S. Mukai	Algebraic geometry – an introduction with search of its origin
		T. Hikita	Introduction to symplectic duality
		K. Terui	Universal Algebra as an Introduction to Undergraduate Algebra
41 <sup>st</sup> (2019)	116 participants (421 in total)	M. Yamada	Unsolved problems in fluid dynamics
		Y. Kobayashi	Duality in combinatorial optimization
		K. Nakanishi	Functional inequalities and energy concentration
42 <sup>nd</sup>	Cancelled due to COVID-19.		

# Lecture for undergraduate students of Kyoto U.

RIMS faculty members give lectures for undergraduate students in relay system. The title is “Modern mathematics and the mathematical sciences –Basic concept and its application to other disciplines –”.

## Lectures given in the first semester 2020

M. Yamashita	An introduction to the Atiyah-Singer index theorem
T. Mochizuki	Introduction to Topology
N. Kishimoto	Solvability of Partial Differential Equations
K. Ishikawa	Knot theory and invariants
T. Hikita	Introduction to Geometric Representation Theory
Y. Hoshi	An introduction to some fundamental notions in number theory via quadratic fields
T. Ishikawa	An introduction to Symplectic Geometry via rigidity of Poisson brackets
H. Stefan	Euler and the Basel Problem
K. Muroya	Diagrammatic execution models for functional programming
K. Ishimoto	Invitation to fluid dynamics
N. Ozawa	Einstein–Podolsky–Rosen paradox
K. Ono	Around fixed point theorems
A. Tamagawa	Quadratic residue, finite fields, and quadratic fields

# RMS's Response to Covid-19

Summary Based on the university's policy and guidelines, RIMS is taking measures to prevent the spread of the Novel Coronavirus (COVID-19) such as practicing thorough disinfection of hands and cough etiquette, ventilating, restricting nonessential visits to the institute in order to reduce close contact with others, conducting remote work and encouraging staggered working hours.

## Guidelines

- Guidelines for the Restriction of Activities to Prevent the Spread of the Novel Coronavirus (Ver.3)
- \* Manual of Measures to Prevent the Spread of the Novel Coronavirus (COVID-19)
- \* “Precautions to be Taken Regarding Classes in the First Semester of 2020 (Ver.1)” Updated in November 13.
- \* Restrictions of visitors who have fever.

In the cases of the COVID-19 infection at RIMS

RIMS announces the “Procedures to be followed at RIMS” to all members.

## Hybrid meeting at RIMS

Guidelines for RIMS Joint Research Activities

<http://www.kurims.kyoto-u.ac.jp/kyoten/en/covid-19.html>

The Research Institute for Mathematical Sciences (RIMS) has developed the following guidelines for meetings (workshops, symposia and seminars) hosted as part of its Joint Research Activities. Possible formats of each meeting depend on Kyoto University's Level of Activity Restriction, whose latest status can be found here:

<https://www.kyoto-u.ac.jp/en/about/safety/coronavirus.html>

i) When the Level of Activity Restriction is 2– or higher, the meeting shall be either canceled, postponed to a later date in the same academic year, or held entirely online using Zoom.

ii) When the Level of Activity Restriction is 1, we recommend an online meeting using Zoom, but if the organizer (principal researcher) sees fit, a (partly) face-to-face meeting is also possible with capacity restrictions and adequate hygiene measures.

iii) When the Level of Activity Restriction is 0, the meeting takes place physically as usual.

**Tandem-workshop 2021 at MFO and RIMS:** Call for applications.

<http://www.kurims.kyoto-u.ac.jp/kyoten/ja/kobo/2021t/boshuyoko2021t.pdf>

## Recommendation in 2018 and Current State of RIMS

1. Kyoto University bidding for a new building for RIMS should be reactivated. In the mean time, rationalising the space made available to RIMS to reduce fragmentation between different sites should be addressed as a matter of urgency.

Whilst RIMS has submitted repeated requests to the university for a new building, unfortunately there has been absolutely no progress due to the budget deficit of the government. On the other hand, Kyoto University allowed RIMS to utilize the 2nd floor of the Research Building No. 15 in April 2018, which has slightly eased the shortage of space. As a result, RIMS is currently spread across 5 separate sites. RIMS continues to make efforts to gather the separate sites to one or two buildings.

2. RIMS should seek new avenues of funding to support its international mission on the basis of the know how it has accumulated.

RIMS can report satisfactory progress here in the form of two substantial new grants. With these grants, RIMS activated its International Cooperative Research program, as discussed in Section 5-1, and founded the Center for Research in Next-Generation Geometry, as discussed in Section 7-2.

3. In its effort for internationalisation, RIMS should bid also for the organisation of international conferences

RIMS has major progress here as well. As discussed in Section 5, RIMS activated the International Cooperative Research program in 2018, and for all the projects (except the long-term researchers one) applications are opened internationally. Moreover, RIMS Workshops of Type C, which is a new category, are exclusively for international researchers.

4. RIMS should continue to pursue intensively its international search for very high potential mathematicians when posts are vacant.

RIMS had two open positions for associate professors and one for an assistant professor this year. In each case, RIMS made the application documents available in both in Japanese and English, announced them through HP, and asked professors to announce them in related international mailing lists.

5. It is advisable for RIMS to continue the diversification of topics, gender and origins represented in its faculty.

As mentioned in Section 2, RIMS hired another female assistant professor from September 2019. (She was recruited directly from a Ph.D. program at the University of Tokyo.) In 2019, RIMS hired one British national (who obtained a Ph.D. at the University of Oxford) for an associate professor position, and one postdoc from Armenia. In the whole area of recruitment, RIMS is very careful about the diversification of topics. RIMS continues to make efforts towards diversification.

# Future Prospects

- Toward international cooperative research center
  - Administration
  - Recruitment of international faculty members
  - Cooperative research
    - Closer relations with international institutions
  - International JU/RC program (starting in autumn 2018)
- Researchers in RIMS
  - Recruitment of permanent staff of the highest level
  - Balance of faculties in “Pure math” and “Applied math”
- Establish a more solid research supporting structure
  - New building
  - Stable budget