

Proceedings of the 53rd Symposium on Ring Theory and Representation Theory

September 6 (Mon.) – 9 (Thur.), 2021
Yamaguchi University, Japan (Zoom, Online)

Edited by
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Osaka Kyoiku University

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第53回 環論および表現論シンポジウム報告集

2021年9月6日(月) – 9日(木)
山口大学 (Zoom, Online)

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Organizing Committee of The Symposium on Ring Theory and Representation Theory

The Symposium on Ring Theory and Representation Theory has been held annually in Japan and the Proceedings have been published by the organizing committee. The first Symposium was organized in 1968 by H. Tominaga, H. Tachikawa, M. Harada and S. Endo. After their retirement a new committee has been formed in 1997 to manage the Symposium, and its committee members are listed in the web page

<http://www.ring-theory-japan.com/ring/h-of-ringsymp.html>.

The present members of the committee are S. Kawata (Nagoya City Univ.), I. Kikumasa (Yamaguchi Univ.), I. Mori (Shizuoka Univ.), and T. Nishinaka (Univ. of Hyogo).

The Proceedings of each Symposium are edited by the program organizer. If you wish to have these Proceedings, please ask the program organizer of each Symposium or one of the committee members.

For information on ring theory and representation theory of groups and algebras (including schedules of meetings and symposiums), as well as ring mailing list service for registered members, please refer to the following websites, which are edited by K. Yamaura (Univ. of Yamanashi):

<http://www.ring-theory-japan.com/ring/> (in Japanese)

<http://www.ring-theory-japan.com/ring/japan/> (in English)

The Symposium in 2022 will be held at Saitama University from September 5 (Mon) to September 8 (Thu). The program organizer is N. Kunugi (Tokyo Univ. of Science), and the local organizer is A. Hida (Saitama Univ.).

Shigeto Kawata
Nagoya, Japan
February, 2022

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Preface

The 53rd Symposium on Ring Theory and Representation Theory was held at Yamaguchi University (Zoom, Online) on September 6th – 9th, 2021. The symposium and this proceedings are financially supported by

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This volume consists of the articles presented at the symposium. We would like to thank all speakers and coauthors for their contributions.

We would also like to express our thanks to all the members of the organizing committee for their helpful suggestions concerning the symposium. Finally we would like to express our gratitude to Local organizer, Professor Yosuke Kuratomi, Zoom supporters Professor Ryo Kanda and Katsunori Sanada and students of Yamaguchi University who contributed in the organization of the symposium.

Yoshitomo Baba
Osaka, Japan
February, 2022

第53回環論および表現論シンポジウム プログラム

9月6日 (月)

(Zoom によるリアルタイム講演)

10:00–10:30 大竹 優也 (名古屋大学), 木村 海渡 (名古屋大学), 高橋 亮 (名古屋大学)
Vanishing of Ext modules over Cohen-Macaulay rings

10:40–11:10 中村 力 (東京大学)
Large tilting objects induced by codimension functions and homomorphic images of Cohen-Macaulay rings

11:20–11:50 行田 康晃 (名古屋大学)
Positive cluster complexes and τ -tilting simplicial complexes

13:30–14:00 本間 孝拓 (東京理科大学), 相原 琢磨 (東京学芸大学)
 τ -tilting finite triangular matrix algebras

14:10–14:40 柴田 義大 (山口大学), 菊政 勲 (山口大学), 倉富 要輔 (山口大学)
On almost N -projective modules and generalized N -projective modules

15:00–15:30 白井 智 (東京理科大学)
Tate-Hochschild cohomology and eventual periodicity for Gorenstein algebras

15:40–16:10 後藤 悠一郎 (大阪大学)
Generalizations of the correspondence between quasi-hereditary algebras and directed bocses

9月7日 (火)

(Zoom によるリアルタイム講演)

10:00–10:30 浅井 聡太 (大阪大学), 伊山 修 (東京大学)
Numerical torsion pairs and canonical decompositions for elements in the Grothendieck group

10:40–11:10 木村 雄太 (東京大学), 伊山 修 (東京大学)
Subcategories and silting objects of Noetherian algebras

11:20–11:50 神田 遼 (大阪市立大学), 中村 力 (東京大学)
Structure theorem for flat cotorsion modules over Noether algebras

13:30–14:00 宮本 賢伍 (茨城大学), Wang Qi (大阪大学)

On τ -tilting finiteness of tensor product algebras between simply connected algebras

14:10–14:40 胡 海剛 (静岡大学)

Algebras associated to noncommutative conics in quantum projective planes

14:50–15:20 板場 綾子 (東京理科大学), 毛利 出 (静岡大学)

Characterization of the quantum projective planes finite over their centers

9月8日 (水)

(Zoom によるリアルタイム講演)

10:00–10:30 酒井 嵐士 (名古屋大学)

Localization of extriangulated categories

10:40–11:10 榎本 悠久 (大阪府立大学)

Some classes of subcategories of module categories: classifications and the relation between them

11:20–11:50 塚本 真由 (山口大学), 足立 崇英 (山口大学), 榎本 悠久 (大阪府立大学)

Intervals of s -torsion pairs in extriangulated categories with negative first extensions

13:30–14:00 足立 崇英 (山口大学), 加瀬 遼一 (岡山理科大学)

Examples of tilting-discrete self-injective algebras

14:10–14:40 埴原 紀宏 (名古屋大学)

The structure of Adams graded dg algebras and Cohen-Macaulay representations

14:50–15:20 齋藤 峻也 (名古屋大学)

Tilting theory for periodic triangulated categories

9月9日 (木)

(資料, 講演スライドを環論ホームページに掲載することによって行われる講演)

菊政 勲 (山口大学), 大城 紀代市

Quaternion rings over local rings

小塩 遼太郎 (東京理科大学), 小境 雄太 (東京理科大学)

On support τ -tilting modules and semibricks for blocks of group algebras

板垣 智洋 (高崎経済大学), 鳥居 猛 (岡山大学), 中本 和典 (山梨大学)

Hochschild cohomology of N_m

馬場 良始 (大阪教育大学)

On two-sided Harada rings

平松 直哉 (呉工業高等専門学校)

Krull–Gabriel dimension of Cohen–Macaulay modules over hypersurfaces of type (A_∞)

吉脇 理雄 (大阪市立大学), 平岡 裕章 (京都大学), 池 祐一 (東京大学)

Algebraic stability theorem for derived categories of zigzag persistence modules

The 53rd Symposium on Ring Theory and Representation Theory

Program

September 6 (Monday) Lectures given by online

10:00–10:30 Kaito Kimura (Nagoya University), Yuya Otake (Nagoya University), Ryo Takahashi (Nagoya University)

Vanishing of Ext modules over Cohen-Macaulay rings

10:40–11:10 Tsutomu Nakamura (University of Tokyo)

Large tilting objects induced by codimension functions and homomorphic images of Cohen-Macaulay rings

11:20–11:50 Yasuaki Gyoda (Nagoya University)

Positive cluster complexes and τ -tilting simplicial complexes

13:30–14:00 Takahiro Honma (Tokyo University of Science), Takuma Aihara (Tokyo University of Science)

τ -tilting finite triangular matrix algebras

14:10–14:40 Yoshiharu Shibata (Yamaguchi University), Isao Kikumasa (Yamaguchi University), Yosuke Kuratomi (Yamaguchi University)

On almost N -projective modules and generalized N -projective modules

15:00–15:30 Satoshi Usui (Tokyo University of Science)

Tate-Hochschild cohomology and eventual periodicity for Gorenstein algebras

15:40–16:10 Yuichiro Goto (Osaka University)

Generalizations of the correspondence between quasi-hereditary algebras and directed bocses

September 7 (Tuesday) Lectures given by online

10:00–10:30 Sota Asai (Osaka University), Osamu Iyama (University of Tokyo)

Numerical torsion pairs and canonical decompositions for elements in the Grothendieck group

10:40–11:10 Osamu Iyama (University of Tokyo), Yuta Kimura (University of Tokyo)

Subcategories and silting objects of Noetherian algebras

11:20–11:50 Ryo Kanda (Osaka City University), Tsutomu Nakamura (University of Tokyo)

Structure theorem for flat cotorsion modules over Noether algebras

13:30–14:00 Kengo Miyamoto (Ibaraki University), Qi Wang (Osaka University)
On τ -tilting finiteness of tensor product algebras between simply connected algebras

14:10–14:40 Haigang Hu (Shizuoka University)
Algebras associated to noncommutative conics in quantum projective planes

14:50–15:20 Ayako Itaba (Tokyo University of Science), Izuru Mori (Shizuoka University)
Characterization of the quantum projective planes finite over their centers

September 8 (Wednesday) Lectures given by online

10:00–10:30 Arashi Sakai (Nagoya University)
Localization of extriangulated categories

10:40–11:10 Haruhisa Enomoto (Osaka Prefecture University)
Some classes of subcategories of module categories: classifications and the relation between them

13:20–11:50 Takahide Adachi (Yamaguchi University), Haruhisa Enomoto (Osaka Prefecture University), Mayu Tsukamoto (Yamaguchi University)
Intervals of s -torsion pairs in extriangulated categories with negative first extensions

13:30–14:00 Takahide Adachi (Yamaguchi University), Ryoichi Kase (Okayama University of Science)
Examples of tilting-discrete self-injective algebras

14:10–14:40 Norihiro Hanihara (Nagoya University)
The structure of Adams graded dg algebras and Cohen-Macaulay representations

14:50–15:20 Shunya Saito (Nagoya University)
Tilting theory for periodic triangulated categories

September 9 (Thursday) Lectures given by slide

- Isao Kikumasa (Yamaguchi University), Kiyochi Oshiro
Quaternion rings over local rings
- Ryotaro Koshio (Tokyo University of Science), Yuta Kozakai (Tokyo University of Science)

On support τ -tilting modules and semibricks for blocks of group algebras

- Tomohiro Itagaki (Takasaki City University of Economics), Kazunori Nakamoto (University of Yamanashi), Takeshi Torii (Okayama University)
Hochschild cohomology of N_m
- Yoshitomo Baba (Osaka Kyoiku University)
On two-sided Harada rings
- Naoya Hiramatsu (National Institute of Technology, Kure College)
Krull–Gabriel dimension of Cohen–Macaulay modules over hypersurfaces of type (A_∞)
- Yasuaki Hiraoka (Kyoto University), Yuichi Ike (University of Tokyo), Michio Yoshiwaki (Osaka City University)
Algebraic stability theorem for derived categories of zigzag persistence modules