Proceedings of the 56th Symposium on Ring Theory and Representation Theory

September 16 (Mon.) – 18 (Wed.), 2024
Tokyo Gakugei University, Japan

Edited by
Takuma Aihara, Tokyo Gakugei University
Ayako Itaba, Tokyo University of Science

February, 2025
Koganei, JAPAN

第 56 回 環論および表現論シンポジウム報告集

2024 年 9 月 16 日 (月) – 18 日 (水)
東京学芸大学

編集: 相原琢磨 (東京学芸大学), 板場綾子 (東京理科大学)

2025 年 2 月
東京学芸大学

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 I. Mori (Shizuoka Univ.), I. Kikumasa (Yamaguchi Univ.), T. Aihara (Tokyo Gakugei Univ.), K. Yamaura (Univ. of Yamanashi) and R. Kanda (Osaka Metropolitan Univ.).

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:

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

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

The Symposium 2025 will be held at Okayama University of Science in September. The program and local organizers are T. Araya (Okayama Univ. of Science) and R. Kase (Okayama Univ. of Science).

Izuru Mori
Shizuoka, Japan
February, 2025

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Preface

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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 Hiroshi Nagase of Tokyo Gakugei University, Assistant Program organizer, Professor Ayako Itaba of Tokyo University of Science and the students of Tokyo University of Science who contributed in the organization of the symposium.

Takuma Aihara
Koganei, Japan
February, 2025

第56回環論および表現論シンポジウム (2024年)

プログラム

9月16日（月）

9:55–10:00　あいさつと諸注意

10:00–10:30　加瀬 遼一 (岡山理科大学), 青木 利隆 (神戸大学), 伊山 修 (東京大学), 東谷 章弘 (大阪大学), 水野 有哉 (大阪公立大学)

g-fans of rank 2

10:45–11:15　藤野 秀司 (東京理科大学), 小境 雄太 (東京理科大学), 高村 航平 (東京理科大学)

Construction of two-sided tilting complexes for generalized Brauer tree algebras

11:30–12:00　鈴木 香一 (東京理科大学), 功刀 直子 (東京理科大学)

Lifting of relative stable equivalences of Morita type for blocks of finite groups

13:30–14:00　吉井 豊 (茨城大学)

Some commutation formulas and linear isomorphisms for the hyperalgebra of a simple algebraic group

14:15–15:05　原 和平 (東京大学 カブリ数物連携宇宙研究機構)

Semibricks and spherical objects

15:30–16:00　小西 正秀

On the center of a wreath product of truncated polynomial algebras

16:15–16:45　Cindy Tsang (お茶の水女子大学), 小境 雄太 (東京理科大学)

On skew braces: similarities with rings and groups and their representations

17:00–17:30　酒井 嵐士 (名古屋大学), 小境 雄太 (東京理科大学)

Clifford's theorem in wide subcategories

9月17日（火）

10:00–10:30　塚本 真由 (山口大学), 足立 崇英 (山口大学), Aaron Chan (名古屋大学), 木村 雄太 (広島工業大学)

Quasi-hereditary structures and tilting modules

10:45–11:15　木村 雄太 (広島工業大学), 伊山 修 (東京大学), 上山 健太 (信州大学)

Tilting for Artin–Schelter Gorenstein algebras of dimension one

11:30–12:00　伏見 陸 (名古屋大学)

The correspondence between silting objects and t-structures for non-positive dg algebras

13:30–14:00　臼井 智 (東京都立産業技術高等専門学校), 本間 孝拓 (弓削商船高等専門学校)

The stable category of Gorenstein-projective modules over a monomial algebra

14:15–15:05　平前 直也 (京都大学), 小境 雄太 (東京理科大学)

τ-Tilting finiteness of group algebras and p-hyperfocal subgroups

15:30–16:00　伊山 修 (東京大学), Aaron Chan (名古屋大学), Rene Marczinzik (University of Bonn)

Auslander–Reiten's Cohen–Macaulay algebras and contracted preprojective algebras

16:15–16:45　中本 和典 (山梨大学), 鳥居 猛 (岡山大学)

The moduli of 5-dimensional subalgebras of the full matrix ring of degree 3

18:00–　懇親会

9月18日（水）

10:00–10:30　神田 遼 (大阪公立大学)

Roos categories

10:45–11:15　小野 舞子 (岡山理科大学), Saeed Nasseh (Georgia Southern University), 吉野 雄二 (岡山大学)

The Atiyah class of a dg module and naïve liftings

11:30–12:00　大竹 優也 (名古屋大学), 木村 海渡 (名古屋大学), Justin Lyle (SLMath), 高橋 亮 (名古屋大学)

On the existence of counterexamples for vanishing problems of Ext and Tor

13:30–14:00　高橋 亮 (名古屋大学)

Finiteness of Orlov spectra of singularity categories

14:15–15:05　高島 佑太 (東京都立大学), 上原 北斗 (東京都立大学)

Singularity categories of rational double points in arbitrary characteristic

15:30–16:00　齋藤 峻也 (東京大学)

Torsion-free classes of smooth projective curves of genus 0 and 1

16:15–16:45　松野 仁樹 (東京理科大学), 板場 綾子 (東京理科大学), 齋藤 由宇 (静岡大学)

Defining relations of 3-dimensional cubic AS-regular algebras whose point schemes are reducible

17:00–17:30　毛利 出 (静岡大学)

Classification of locally free sheaf bimodules of rank 2 over a projective line

The 56th Symposium on Ring Theory and Representation Theory

Program

September 16 (Monday)

9:55–10:00 Opening remarks

10:00–10:30 Ryoichi Kase (Okayama University of Science), Toshitaka Aoki (Kobe University), Osamu Iyama (The University of Tokyo), Akihiro Higashitani (Osaka University), Yuya Mizuno (Osaka Metropolitan University)

g-fans of rank 2

10:45–11:15 Shuji Fujino (Tokyo University of Science), Yuta Kozakai (Tokyo University of Science), Kohei Takamura (Tokyo University of Science)

Construction of two-sided tilting complexes for generalized Brauer tree algebras

11:30–12:00 Kyoichi Suzuki (Tokyo University of Science), Naoko Kunugi (Tokyo University of Science)

Lifting of relative stable equivalences of Morita type for blocks of finite groups

13:30–14:00 Yutaka Yoshii (Ibaraki University)

Some commutation fomulas and linear isomorphisms for the hyperalgebra of a simple algebraic group

14:15–15:05 Wahei Hara (Kavli IPMU, The University of Tokyo)

Semibricks and spherical objects

15:30–16:00 Masahide Konishi

On the center of a wreath product of truncated polynomial algebras

16:15–16:45 Cindy Tsang (Ochanomizu University), Yuta Kozakai (Tokyo University of Science)

On skew braces: similarities with rings and groups and their representations

17:00–17:30 Arashi Sakai (Nagoya University), Yuta Kozakai (Tokyo University of Science)

Clifford's theorem in wide subcategories

September 17 (Tuesday)

10:00–10:30 Mayu Tsukamoto (Yamaguchi University), Takahide Adachi (Yamaguchi University), Yuta Kimura (Hiroshima Institute of Technology), Aaron Chan (Nagoya University)

Quasi-hereditary structures and tilting modules

10:45–11:15 Yuta Kimura (Hiroshima Institute of Technology), Osamu Iyama (The University of Tokyo), Kenta Ueyama (Shinshu University)

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11:30–12:00 Riku Fushimi (Nagoya University)

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The stable category of Gorenstein-projective modules over a monomial algebra

14:15–15:05 Naoya Hiramae (Kyoto University), Yuta Kozakai (Tokyo University of Science)

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16:15–16:45 Kazunori Nakamoto (University of Yamanashi), Takeshi Torii (Okayama University)

The moduli of 5-dimensional subalgebras of the full matrix ring of degree 3

18:00– Conference dinner

September 18 (Wednesday)

10:00–10:30 Ryo Kanda (Osaka Metropolitan University)

Roos categories

10:45–11:15 Maiko Ono (Okayama University of Science), Saeed Nasseh (Georgia Southern University), Yuji Yoshino (Okayama University)

The Atiyah class of a dg module and naïve liftings

11:30–12:00 Yuya Otake (Nagoya University), Kaito Kimura (Nagoya University), Ryo Takahashi (Nagoya University), Justin Lyle (Simons Laufer Mathematical Sciences Institute)

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