Proceedings of the 39th Symposium on Ring Theory and Representation Theory

September 16 (Sat.) – 18 (Mon.), 2006
Hiroshima University, Japan

Edited by
Mamoru Kutami
Yamaguchi University

JSPS Grants-in-Aid for Scientific Research
2006 Scientific Research (B)
(Principal Researcher: Kiyoichi Oshiro)

February, 2007
Yamaguchi, JAPAN

第 39 回 環論および表現論シンポジウム報告集

２００６年9月１６日（土）－１８日（月）
広島大学

編集:　久田見 守 (山口大学)

平成１８年度科学研究費補助金
基盤研究 (B)（代表：大城紀代市）

２００７年2月
山口大学

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 was organized in 1997 for managing the Symposium. The present members of the committee are Y. Hirano (Naruto Univ. of Education), S. Koshitani (Chiba Univ.), K. Nishida (Shinshu Univ.) and M. Sato (Yamanashi Univ.).

The Proceedings of each Symposium is edited by program organizer. Anyone who wants these Proceedings should ask to the program organizer of each Symposium or one of the committee members.

The Symposium in 2007 will be held at Tokyo as the joint Symposium with the 5th China-Japan-Korea international Symposium on ring theory for Sep. 10 – 15.

Concerning several information on ring theory group in Japan containing schedules of meetings and symposiums as well as the addresses of members in the group, you should refer the following homepage, which is arranged by M. Sato (Yamanashi Univ.):

http://fuji.cec.yamanashi.ac.jp/~ring/ (in Japanese)

civil2.cec.yamanashi.ac.jp/~ring/japan/ (in English)

Kenji Nishida
Matsumoto, Japan
December, 2006

CONTENTS

Preface vi
Program (Japanese) vii
Program (English) ix

Character theory of semisimple bi-Frobenius algebras
Yukio Doi 1

Linearity Defect of graded modules over Koszul algebras
Kohji Yanagawa 13

Long exact sequences coming from triangles
Amnon Neeman 23

On S-Cohn-Jordan extensions
Jerzy Matczuk 30

A construction of local QF-rings with radical cubed zero
Isao Kikumasa, Kiyoichi Oshiro, Hiroshi Yoshimura 36

Dual ojectivity of quasi-discrete modules and lifting modules
Yosuke Kuratomi 45

Perfect isometries and the Alperin-McKay conjecture
Charles W. Eaton 49

Maximal orders and valuation rings in nonassociative quaternion algebras
John S. Kauta 65

Cohen-Macaulay modules and holonomic modules on filtered Gorenstein rings
Hiroki Miyahara 75

Symmetry in the vanishing of Ext-groups
Izuru Mori 79

On derived equivalences for selfinjective algebras
Hiroki Abe, Mitsuo Hoshino 87

Azumaya's conjecture and Harada rings
Kazutoshi Koike 90

Stable equivalences induced from generalized tilting modules III
Takayoshi Wakamatsu 96

On a tensor product of square matrices in Jordan canonical forms
Ryo Iwamatsu 105

Finite groups having exactly one non-linear irreducible character
Kaoru Motose 111

Integrality of eigenvalues of Cartan matrices in finite groups
Tomoyuki Wada 117

Mackey functor and cohomology of finite groups
Akihito Hida 124

Invariants of complex reductive algebraic groups with simple commutator subgroups
Haruhisa Nakajima 128

Von Neumann regular rings with comparability
Mamoru Kutami 136

PREFACE

The 39th Symposium on Ring Theory and Representation Theory was held at Hiroshima University on September 16th - 18th, 2006. The symposium and the proceedings are financially supported by Iku Nakamura (Hokkaido University) JSPS Grant-in-Aid for Scientific Research (A), No.16204001, and Kiyoichi Oshiro (Yamaguchi University) JSPS Grant-in-Aid for Scientific Research (B), No.18340011.

This volume consists of the articles presented at the symposuim. 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 commitee (Professors Kenji Nishida, Shigeo Koshitani, Masahisa Sato and Yasuyuki Hirano) for their helpful suggestions concerning the symposium. Finally we would like to express our gratitude to Professor Fujio Kubo and his students of Hiroshima University who contributed in the organization of the symposium.

Mamoru Kutami
Yamaguchi, Japan
January, 2007

第 39 回 環論および表現論シンポジウム (2006)
プログラム

９月１６日（土）

09:00 – 09:30 土井 幸雄（岡山大学）
Character theory of semisimple bi-Frobenius algebras

09:40 – 10:10 柳川 浩二（大阪大学）
Linearity Defect of graded modules over an exterior algebra

10:30 – 11:20 Amnon Neeman (Australian National University)
Compactly generated triangulated categories

11:30 – 12:10 Jerzy Matczuk（Warsaw University）
On S-Cohn-Jordan extensions

13:40 – 14:10 大城 紀代市（山口大学）
Local QF-rings with radical cubed zero

14:20 – 14:50 倉富 要輔（北九州工業高等専門学校）
Quasi-discrete 加群と lifting 加群の dual ojective 性について

15:00 – 15:50 Charles W. Eaton (University of Manchester)
Perfect isometries and the Alperin-McKay conjecture (I)

16:10 – 16:50 John S. Kauta（Brunei University）
Valuation rings and maximal orders in noncommutative quaternion algebras

17:00 – 17:30 宮原 大樹（信州大学）
Gorenstein フィルター環上の Cohen-Macaulay 加群と holonomic 加群について

17:40 – 18:10 毛利 出（静岡大学）
Symmetry in the vanishing of Ext-groups

９月１７日（日）

09:00 – 09:30 阿部 弘樹 (筑波大学), 星野 光男 (筑波大学)
QF 多元環の導来同値について

09:40 – 10:10 小池 寿俊（沖縄工業高等専門学校）
Azumaya's conjecture and Harada rings

10:30 – 11:20 Amnon Neeman (Australian National University)
Well generated triangulated categories

11:30 – 12:00 若松 隆義（埼玉大学）
一般傾斜加群により定まる安定同値について

13:30 – 14:00 岩松 良（埼玉大学）
テンサー積行列のジョルダン標準形について

14:10 – 14:40 本瀬 香（弘前大学）
Finite groups having exactly one non-linear irreducible character

14:50 – 15:40 Charles W. Eaton (University of Manchester)
Perfect isometries and the Alperin-McKay conjecture (II)

16:00 – 16:30 和田 倶幸（東京農工大学）
Integrality of eigenvalues of Cartan matrices in finite groups

16:40 – 17:10 飛田 明彦（埼玉大学）
Mackey functor and cohomology of finite groups

17:20 – 17:50 中島 晴久 (城西大学)
Invariants of reductive complex algebraic groups with simple commutator subgroups

９月１８日（月）

09:30 – 10:00 久田見 守（山口大学）
Von Neumann regular rings with comparability

10:10 – 11:00 Amnon Neeman (Australian National University)
The homotopy category of flat R-modules

11:10 – 12:00 Charles W. Eaton (University of Manchester)
Perfect isometries and the Alperin-McKay conjecture (III)

Program of the 39th Symposium on Ring Theory and Representation Theory (2006)

September 16, 2006

09:00 – 09:30 Yukio Doi (Okayama Univ.)
Character theory of semisimple bi-Frobenius algebras

09:40 – 10:10 Kohji Yanagawa (Osaka Univ.)
Linearity Defect of graded modules over an exterior algebra

10:30 – 11:20 Amnon Neeman (Australian National Univ.)
Compactly generated triangulated categories

11:30 – 12:10 Jerzy Matczuk (Warsaw Univ.)
On S-Cohn-Jordan extensions

13:40 – 14:10 Kiyoichi Oshiro (Yamaguchi Univ.)
Local QF-rings with radical cubed zero

14:20 – 14:50 Yosuke Kuratomi (Kitakyushu National College of Tech.)
Dual ojectivity of quasi-discrete modules and lifting modules

15:00 – 15:50 Charles W. Eaton (Univ. of Manchester)
Perfect isometries and the Alperin-McKay conjecture (I)

16:10 – 16:50 John S. Kauta (Brunei Univ.)
Valuation rings and maximal orders in noncommutative quaternion algebras

17:00 – 17:30 Hiroki Miyahara (Shinshu Univ.)
Cohen-Macaulay modules and holonomic modules over Gorenstein filtered rings

17:40 – 18:10 Izuru Mori (Shizuoka Univ.)
Symmetry in the vanishing of Ext-groups

September 17, 2006

09:00 – 09:30 Hiroki Abe and Mitsuo Hoshino (Univ. of Tsukuba)
On derived equivalences for selfinjective algebras

09:40 – 10:10 Kazutoshi Koike (Okinawa National College of Tech.)
Azumaya's conjecture and Harada rings

10:30 – 11:20 Amnon Neeman (Australian National Univ.)
Well generated triangulated categories

11:30 – 12:00 Takayoshi Wakamatsu (Saitama Univ.)
On stable equivalences of Frobenius algebras defined by generalized tilting modules

13:30 – 14:00 Ryo Iwamatsu (Saitama Univ.)
On a tensor product of square matrices in Jordan canonical form

14:10 – 14:40 Kaoru Motose (Hirosaki Univ.)
Finite groups having exactly one non-linear irreducible character

14:50 – 15:40 Charles W. Eaton (Univ. of Manchester)
Perfect isometries and the Alperin-McKay conjecture (II)

16:00 – 16:30 Tomoyuki Wada (Tokyo Univ. of Agr. and Tech.)
Integrality of eigenvalues of Cartan matrices in finite groups

16:40 – 17:10 Akihito Hida (Saitama Univ.)
Mackey functor and cohomology of finite groups

17:20 – 17:50 Haruhisa Nakajima (Josai Univ.)
Invariants of reductive complex algebraic groups with simple commutator subgroups

September 18, 2006

09:30 – 10:00 Mamoru Kutami (Yamaguchi Univ.)
Von Neumann regular rings with comparability

10:10 – 11:00 Amnon Neeman (Australian National Univ.)
The homotopy category of flat R-modules

11:10 – 12:00 Charles W. Eaton (Univ. of Manchester)
Perfect isometries and the Alperin-McKay conjecture (III)