<table>
<thead>
<tr>
<th>項目</th>
<th>内容</th>
</tr>
</thead>
<tbody>
<tr>
<td>表紙・目次</td>
<td></td>
</tr>
</tbody>
</table>
数理解析研究所講究録 1836

RIMS 合宿型セミナー

Representation spaces, twisted topological invariants and geometric structures of 3-manifolds

京都大学数理解析研究所

2013年5月
Representation spaces, twisted topological invariants and geometric structures of 3-manifolds

May 28 ~ June 1, 2012
edited by Takayuki Morifuji

May, 2013
Research Institute for Mathematical Sciences
Kyoto University, Kyoto, Japan

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

The RIMS Seminar “Representation spaces, twisted topological invariants and geometric structures of 3-manifolds” was held at Gora Seiunso, Hakone, Japan, during the period May 28 - June 1, 2012.

In this seminar there were 15 talks concerning with representation spaces, twisted topological invariants and their applications to geometric structures of 3-manifolds. Most of the papers in this volume are based on the talks.

On behalf of the organizers, I would like to thank all the participants and speakers. Masaaki Suzuki took care of most of the practical aspects of producing this volume. His devotion is highly appreciated. I would also like to express my sincere gratitude to the RIMS for support of the seminar and publication of the proceedings.

Yokohama, January 2013

Takayuki Morifuji
RIMS Seminar
Representation spaces, twisted topological invariants and geometric structures of 3-manifolds
Gora Seiunso, May 28–June 1, 2012

Program

May 28 (Mon)
13:30–14:30 Ayumu Inoue (Tokyo)
An approach to classifying links up to link-homotopy using quandle colorings
14:45–16:15 Joan Porti (Barcelona)
Geometrization of three-manifolds
16:30–17:30 Yasushi Yamashita (Nara)
Out($F_n$) actions on $SL(2,\mathbb{C})$-character variety

May 29 (Tue)
9:00–10:30 Yuichi Kabaya (Osaka)
Parametrization of $PSL(n,\mathbb{C})$-representations of surface groups I
11:00–12:00 Eiko Kin (Tokyo)
The boundary of a fibered face of the magic 3-manifold and the asymptotic behavior of the minimal pseudo-Anosovs dilatations
14:30–15:30 Luisa Paoluzzi (Marseille)
The character varieties of Montesinos knots of Kinoshita-Terasaka type
16:00–17:30 Makoto Sakuma (Hiroshima)
End invariants of Heckoid groups for 2-bridge links

May 30 (Wed)
9:00–10:30 Yasushi Yamashita (Nara)
A brief introduction to the virtual Haken conjecture
11:00–12:00 Greg McShane (Grenoble, Tokyo)
Geometric identities

May 31 (Thu)
9:00–10:30 Luisa Paoluzzi (Marseille)
The notion of commensurability in group theory and geometry
11:00–12:00 Yuichi Kabaya (Osaka)
Parametrization of $PSL(n,\mathbb{C})$-representations of surface groups II
14:30–15:30 Hidetoshi Masai (Tokyo)
On the number of hyperbolic 3-manifolds of a given volume
16:00–17:30 Fumikazu Nagasato (Nagoya)
On trace-free characters and abelian knot contact homology
June 1 (Fri)
9:00–10:30  Masaharu Ishikawa (Sendai)
  Tangle sums and factorization of A-polynomials
11:00–12:00 Joan Porti (Barcelona)
  Reidemeister torsion and volume for hyperbolic knots

Organizers:  Takayuki Morifuji (Yokohama)
              Yasushi Yamashita (Nara)
              Teruaki Kitano (Hachioji)
Representation spaces, twisted topological invariants and
topological geometric structures of 3-manifolds
RIMS 合宿セミナー報告集

2012年5月28日～6月1日
研究代表者 森藤孝之 (Takayuki Morifuji)
副代表者 山下靖 (Yasushi Yamashita)

目 次

1. EXTENDING GEODESICS IN THE CURVE COMPLEX 1
   奈良女子大・人間文化 (Nara Women’s U.) 井戸 裕子 (Ayako Ido)
   奈良女子大・理 (Nara Women’s U.) Yeonhee Jang
   " 小林 毅 (Tsuyoshi Kobayashi)

2. TOWARD OBTAINING A TABLE OF LINK-HOMOTOPY CLASSES:
   THE SECOND HOMOLOGY OF A REDUCED KNOT QUANDLE 7
   東工大・情報理工学 (Tokyo Inst. Tech.) 井上 歩 (Ayumu Inoue)

3. TANGLE SUMS, NORM CURVES AND CYCLIC SURGERIES 18
   東北大・理学 (Tohoku U.) 石川 昌治 (Masaharu Ishikawa)
   California State U. Thomas W. Mattman
   埼玉大・理工学 (Saitama U.) 下川 航也 (Koya Shimokawa)

4. ON FOCK-GONCHAROV COORDINATES OF THE
   ONCE-PUNCTURED TORUS GROUP 34
   阪大・理学 (Osaka U.) 藻谷 祐一 (Yuichi Kabaya)

5. NOTES ON PSEUDO-ANOSOV WITH SMALL DILATATIONS
   COMING FROM THE MAGIC 3-MANIFOLD 45
   阪大・理学 (Osaka U.) 金 英子 (Eiko Kin)

6. LINEAR REPRESENTATIONS OF A KNOT GROUP OVER A FINITE
   RING AND ALEXANDER POLYNOMIAL AS AN OBSTRUCTION 65
   創価大・工 (Soka U.) 北野 晃朗 (Teruaki Kitano)

7. TORSION VOLUME FORMS ON CHARACTER VARIETIES 75
   東大・数理科学 (U. Tokyo) 北山 貴裕 (Takahiro Kitayama)
8. END INVARIANTS OF HECKOID GROUPS FOR 2-BRIDGE LINKS 81
   Pusan Nat. U. Donghi Lee
   広島大・理学 (Hiroshima U.) 作間 誠 (Makoto Sakuma)

9. ON VOLUME PRESERVING MOVES ON GRAPHS WITH PARABOLIC MERIDIANS 88
   東工大・情報理工学 (Tokyo Inst. Tech.) 正井 秀俊 (Hidetoshi Masai)

10. GEOMETRIC IDENTITIES 94
    U. Grenoble Greg McShane

11. ON THE SECOND COEFFICIENT OF THE TWISTED ALEXANDER POLYNOMIAL 104
    慶應大・経済 (Keio U.) 森藤 孝之 (Takayuki Morifuji)

12. ON THE TRACE-FREE CHARACTERS 110
    名城大・理工 (Meijo U.) 長郷 文和 (Fumikazu Nagasato)

13. THE NOTION OF COMMENSURABILITY IN GROUP THEORY AND GEOMETRY 124
    Aix-Marseille U. Luisa Paoluzzi

14. ACTIONS OF HYPERBOLIC THREE-MANIFOLD GROUPS ON COMPLEX PROJECTIVE SPACE 138
    U. Autònoma de Barcelona Joan Porti

15. LOCAL AND INFINITESIMAL RIGIDITY OF REPRESENTATIONS OF HYPERBOLIC THREE MANIFOLDS 154
    U. Autònoma de Barcelona Joan Porti

16. ON PSEUDO-MERIDIANS OF THE TREFOIL KNOT GROUP 178
    秋田大・教育文化 (Akita U.) 鈴木 正明 (Masaaki Suzuki)

17. NOTE ON THE ASYMPTOTICS OF THE HIGHER DIMENSIONAL REIDMEISTER TORSION FOR BRIESKORN MANIFOLDS 181
    東工大・理工学 (Tokyo Inst. Tech.) 山口 祥司 (Yoshikazu Yamaguchi)

18. A VERY BRIEF INTRODUCTION TO VIRTUAL HAKEN CONJECTURE 192
    奈良女子大・理 (Nara Women’s U.) 山下 靖 (Yasushi Yamashita)