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Twisted topological invariants and topology of low-dimensional manifolds

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Twisted topological invariants and topology of low-dimensional manifolds

September 13～17, 2010

edited by Takayuki Morifuji

June, 2011

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 "Twisted topological invariants and topology of low-dimensional manifolds" was held at Akita Shirakami Taiken Center, Akita, Japan, during the period September 13-17, 2010.

In this seminar there were 16 talks concering with twisted topological invariants and their applications to topology of low-dimensional 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.

Tokyo, March 2011

Takayuki Morifuji

RIMS Seminar

Twisted topological invariants and topology of low-dimensional manifolds

Akita Shirakami Taiken Center, September 13–17, 2010

Program

September 13 (Mon)

16:30–17:30 Stefan Friedl (Cologne)
Twisted Alexander polynomials - an overview

September 14 (Tue)

9:00–9:40 Masaaki Suzuki (Akita)
Epimorphisms between knot groups: determination of the partial order

10:00–11:00 Taehee Kim (Seoul)
Twisted Alexander polynomials and character varieties for 2-bridge knots

11:20–12:00 Yoshikazu Yamaguchi (Tokyo)
On the twisted Alexander polynomial for metabelian $SL(2,\mathbb{C})$-representations with the adjoint action

14:30–15:30 Shicheng Wang (Beijing)
Graph manifolds have virtually positive Seifert volume

16:00–17:30 Makoto Sakuma (Hiroshima)
Epimorphisms between 2-bridge links: Essential simple loops on 2-bridge spheres

September 15 (Wed)

9:00–9:40 Yuya Koda (Sendai)
On the Reidemeister-Turaev torsion of standard Spin^c-structures on Seifert fibered 3-manifolds

10:00–11:00 Jae Choon Cha (Pohang)
Why is the twisted invariant related to fiberability?

11:20–12:20 Masaaki Wada (Osaka)
Twisted Alexander polynomial revisited

14:30–17:30 Problem Session

September 16 (Thu)

9:00–9:40 Yuichi Yamada (Tokyo)
Lens space surgeries along certain 2-component links, and Reidemeister-Turaev torsion

10:00–11:00 Shicheng Wang (Beijing)
Finiteness of gluing under domination

11:20–12:00 Taehee Kim (Seoul)
Cobordism on homology cylinders and combinatorial torsions

14:30–15:30 Takuya Sakasai (Tokyo)
The Magnus representation and homology cobordism groups of homology cylinders

16:00–17:30 Stefan Friedl (Cologne)
Detecting the Thurston norm and fibered classes

September 17 (Fri)

9:00–9:40 Takahiro Kitayama (Tokyo)
On the leading coefficients of higher-order Alexander polynomials

10:00–11:00 Jae Choon Cha (Pohang)
L^2-signatures: twisted invariants from duality

Organizers: Takayuki Morifuji (Tokyo)
Masaaki Suzuki (Akita)
Teruaki Kitano (Tokyo)

Twisted topological invariants and topology of low-dimensional manifolds

RIMS 合宿型セミナー報告集

２０１０年９月１３日～９月１７日

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