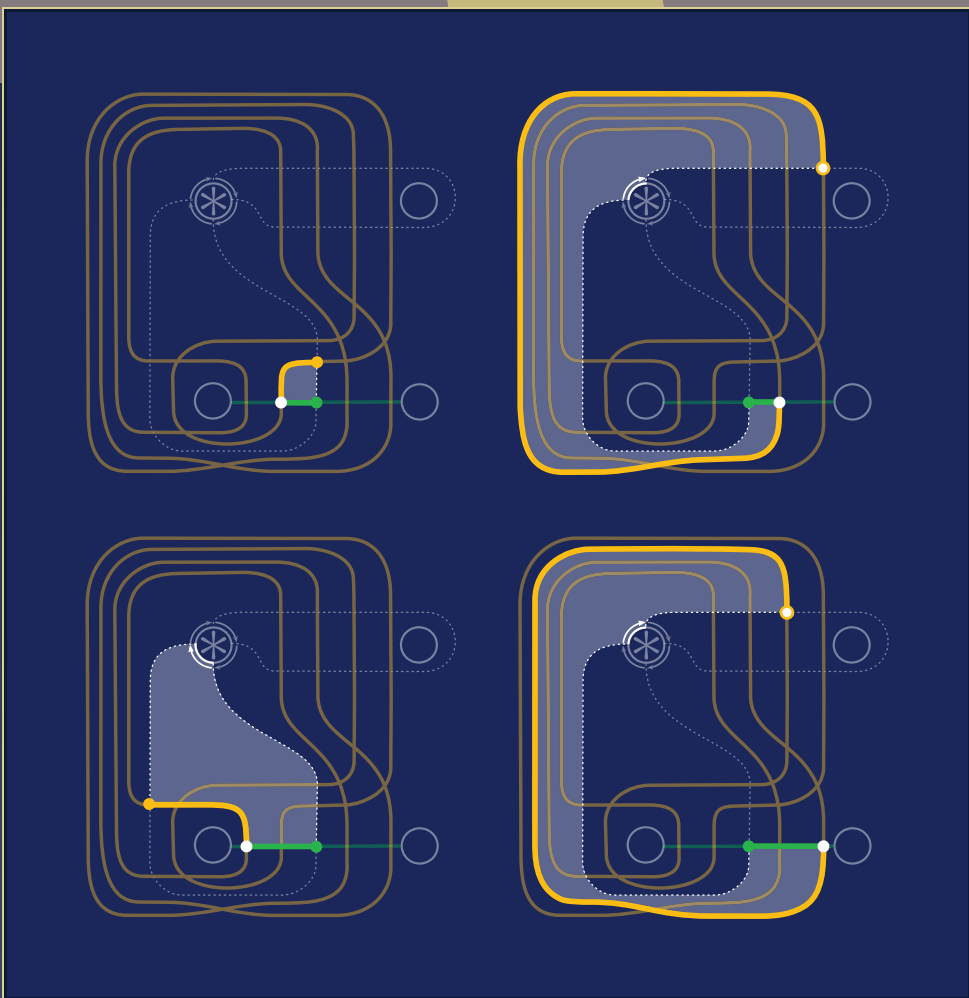


Gauge Theory and Low-Dimensional Topology: Progress and Interaction

Preface



Preface

This volume is a proceedings of the 2020 Banff International Research Station (BIRS) workshop “Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4”. This was the sixth iteration of a recurring workshop held in Banff. Regrettably, the workshop was not held onsite but was instead an online gathering over Zoom, as a result of the Covid-19 pandemic. However, one benefit of the online format was that the participant list could be expanded beyond the usual strict limit of 42 individuals. It seemed to be also fitting, given the altered circumstances and larger than usual list of participants, to take the opportunity to put together a conference proceedings.

The result is this volume, which features papers showcasing research from participants at the sixth Interactions workshop (or earlier ones). As the title suggests, the emphasis is on research in gauge theory, contact and symplectic topology, and low-dimensional topology. The volume contains sixteen refereed papers, and it is representative of the many excellent talks and fascinating results presented at the Interactions workshops over the years since its inception in 2007.

We take this opportunity to acknowledge the contributions of Dennis Auroux and Olivier Collin, who were instrumental in founding and organizing the BIRS Interactions workshops. Partial funding was provided by NSF grant DMS1454865 and the Georgia Institute of Technology’s Elaine M. Hubbard Distinguished Faculty Award. We thank Conall Hegarty and Fintan Hegarty for their rapid and professional copy-editing services. We also thank Alex Scorpan and Silvio Levy, our contacts at Mathematical Sciences Publishers, for all their help and support throughout the publication process.

JOHN A. BALDWIN, Boston College
john.baldwin@bc.edu

HANS U. BODEN, McMaster University
boden@mcmaster.ca

JOHN B. ETNYRE, Georgia Institute of Technology
etnyre@math.gatech.edu

LIAM WATSON, University of British Columbia
liam@math.ubc.ca

Volume Editors:

John A. Baldwin
Boston College
Boston, MA
United States

Hans U. Boden
McMaster University
Hamilton, ON
Canada

John B. Etnyre
Georgia Institute of Technology
Atlanta, GA
United States

Liam Watson
University of British Columbia
Vancouver, BC
Canada

The cover image is based on an illustration from the article “Khovanov homology and strong inversions”, by Artem Kotelskiy, Liam Watson and Claudius Zibrowius (see p. 232).

The contents of this work are copyrighted by MSP or the respective authors.
All rights reserved.

Electronic copies can be obtained free of charge from <http://msp.org/obs/5> and printed copies can be ordered from MSP (contact@msp.org).

The Open Book Series is a trademark of Mathematical Sciences Publishers.

ISSN: 2329-9061 (print), 2329-907X (electronic)

ISBN: 978-1-935107-11-8 (print), 978-1-935107-10-1 (electronic)

First published 2022.



MATHEMATICAL SCIENCES PUBLISHERS

798 Evans Hall #3840, c/o University of California, Berkeley CA 94720-3840
contact@msp.org

<https://msp.org>

Gauge Theory and Low-Dimensional Topology: Progress and Interaction

This volume is a proceedings of the 2020 BIRS workshop *Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4*. This was the 6th iteration of a recurring workshop held in Banff. Regrettably, the workshop was not held onsite but was instead an online (Zoom) gathering as a result of the Covid-19 pandemic. However, one benefit of the online format was that the participant list could be expanded beyond the usual strict limit of 42 individuals. It seemed to be also fitting, given the altered circumstances and larger than usual list of participants, to take the opportunity to put together a conference proceedings.

The result is this volume, which features papers showcasing research from participants at the 6th (or earlier) *Interactions* workshops. As the title suggests, the emphasis is on research in gauge theory, contact and symplectic topology, and in low-dimensional topology. The volume contains 16 refereed papers, and it is representative of the many excellent talks and fascinating results presented at the *Interactions* workshops over the years since its inception in 2007.

TABLE OF CONTENTS

Preface — John A. Baldwin, Hans U. Boden, John B. Etnyre and Liam Watson	ix
A friendly introduction to the bordered contact invariant — Akram Alishahi, Joan E. Licata, Ina Petkova and Vera Vértesi	1
Branched covering simply connected 4-manifolds — David Auckly, R. İnanç Baykur, Roger Casals, Sudipta Kolay, Tye Lidman and Daniele Zuddas	31
Lifting Lagrangian immersions in $\mathbb{C}P^{n-1}$ to Lagrangian cones in \mathbb{C}^n — Scott Baldrige, Ben McCarty and David Vela-Vick	43
L-space knots are fibered and strongly quasipositive — John A. Baldwin and Steven Sivek	81
Tangles, relative character varieties, and holonomy perturbed traceless flat moduli spaces — Guillem Cazassus, Chris Herald and Paul Kirk	95
On naturality of the Ozsváth–Szabó contact invariant — Matthew Hedden and Lev Tovstopyat-Nelip	123
Dehn surgery and nonseparating two-spheres — Jennifer Hom and Tye Lidman	145
Broken Lefschetz fibrations, branched coverings, and braided surfaces — Mark C. Hughes	155
Small exotic 4-manifolds and symplectic Calabi–Yau surfaces via genus-3 pencils — R. İnanç Baykur	185
Khovanov homology and strong inversions — Artem Kotelskiy, Liam Watson and Claudius Zibrowius	223
Lecture notes on trisections and cohomology — Peter Lambert-Cole	245
A remark on quantum Hochschild homology — Robert Lipshitz	265
On uniqueness of symplectic fillings of links of some surface singularities — Olga Plamenevskaya	269
On the spectral sets of Inoue surfaces — Daniel Ruberman and Nikolai Saveliev	285
A note on thickness of knots — András I. Stipsicz and Zoltán Szabó	299
Morse foliated open books and right-veering monodromies — Vera Vértesi and Joan E. Licata	309