CONTEMPORARY MATHEMATICS

504

Alpine Perspectives on Algebraic Topology

Third Arolla Conference on Algebraic Topology August 18–24, 2008 Arolla, Switzerland

> Christian Ausoni Kathryn Hess Jérôme Scherer Editors



American Mathematical Society

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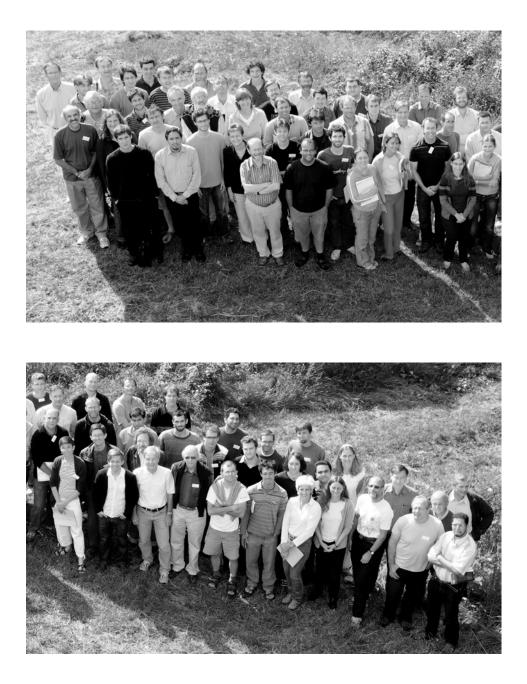
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Dedicated to Dominique Arlettaz, initiator of the Arolla Conference series.

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Participants in the third Arolla Conference

Preface

Nine years after the first edition, the Third Arolla Conference on Algebraic Topology brought together around 80 mathematicians specialised in a broad range of topics in algebraic topology. Some of us have had the privilege to attend all three editions, and we felt almost at home up there in the Alps, at an altitude of 2000 meters. However, along with the more experienced and faithful participants, many PhD students and postdocs (altogether 30 younger mathematicians) attended the conference. This reveals the vigor of the subject, and is, hopefully, a good sign for the future of the Arolla conferences series!

These proceedings reflect the variety of topics discussed at the conference. Quite roughly, Monday and Tuesday were dedicated to geometry, unstable homotopy theory and operads, Wednesday to algebraic K-theory and traces, Thursday to Goodwillie calculus and its applications, and Friday to field theories and moduli spaces. Saturday then offered conference participants a bouquet of these topics.

We would like to thank the following institutions and organizations for their generous financial support and sponsorship of the Third Arolla Conference on Algebraic Topology:

- Swiss National Science Foundation
- Bonn International Graduate School, Hausdorff Center for Mathematics
- Ministerio de Educación y Ciencia de España
- Institute of Geometry, Algebra and Topology, EPFL, Lausanne
- Faculty of Basic Sciences, EPFL, Lausanne
- III-ème Cycle Romand de Mathématiques
- Swiss Mathematical Society

We would like to warmly thank the owners and personnel of the Hôtel Mont-Collon in Arolla. It is a pleasure to organize a conference with their help.

Our thanks also go to the speakers and to all the participants, to the contributors of the present volume, and of course to the anonymous referees; without them this volume would not exist. We also thank Chris Thivierge at the AMS for her help and guidance.

Finally J. Scherer would like to thank the MPI in Bonn and the IHES in Bures-sur-Yvette for their generous hospitality during the months where most of the editorial work on this volume has been done.

Christian Ausoni, Kathryn Hess and Jérôme Scherer



Pre-conference trek: Pigne d'Arolla (3'796m)

List of Conference Talks

Monday, August 18

Anand Dessai	Some applications of elliptic genera to group actions and positive curvature
Tuesday, August 19	
Natàlia Castellana	Constructing maps between classifying spaces of p-local finite groups
Assaf Libman	The Burnside ring of a saturated fusion system tem
Kasper Andersen	The isogeny theorem for p-compact groups
Clemens Berger	The lattice path operad
Benoît Fresse	Koszul duality of the chain little cubes operads

Short communications

Jonathan Barmak	Simple homotopy types and finite spaces
Simona Paoli	Algebraic André-Quillen homology and higher categorical structures
My Ismail Mamouni	Lower bounds on the cohomological dimension of elliptic spaces

Wednesday, August 20

Bjørn Ian Dundas	Witt rings
Lars Hesselholt	K-theory of the dual numbers
Christian Schlichtkrull	Higher topological Hochschild homology of Thom spectra
Birgit Richter	An involution on the K-theory of (some) bimonoidal categories
Holger Reich	Algebraic K-theory of virtually cyclic groups

Thursday, August 21

Tom Goodwillie	Functor calculus and pseudoisotopy spaces
Pascal Lambrechts	Rational homology of the space of smooth embeddings
Ismar Volić	Embedding calculus and Milnor invariants

Friday, August 22

Ralph Cohen	Field theories, string topology, and Hochschild homology
Nathalie Wahl	Homological conformal field theories
Søren Galatius	Spaces of graphs
Paolo Salvatore	The topological cyclic Deligne conjecture
Ulrike Tillmann	From braid to mapping class groups, config- uration to moduli spaces

Saturday, August 23

Jean-Claude Hausmann	Conjugation spaces
Ian Hambleton	Equivariant CW-complexes and the orbit category
Jacob Lurie	Moduli problems for ring spectra
Wojciech Chachólski	How to enumerate Bousfield classes in de- rived categories of abelian categories?
Nick Kuhn	Towards calculating the unstable v_n -periodic homotopy groups of spheres

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This volume contains the proceedings of the Third Arolla Conference on Algebraic Topology, which took place in Arolla, Switzerland, on August 18–24, 2008.

This volume includes research papers on stable homotopy theory, the theory of operads, localization and algebraic K-theory, as well as survey papers on the Witten genus, on localization techniques and on string topology—offering a broad perspective of modern algebraic topology.



