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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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* |
| 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* |