

CONTEMPORARY MATHEMATICS

617

An Alpine Expedition through Algebraic Topology

Fourth Arolla Conference
Algebraic Topology
August 20–25, 2012
Arolla, Switzerland

Christian Ausoni
Kathryn Hess
Brenda Johnson
Wolfgang Lück
Jérôme Scherer
Editors



American Mathematical Society

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Providence, Rhode Island

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Participants of the Fourth Aroloia Conference on Algebraic Topology, August 20–25, 2012, held in Aroloia, Switzerland

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Preface

After the conferences held in 1999, 2004 and 2008, mathematicians of many different horizons gathered in the small village of Arolla for an alpine expedition through algebraic topology. In this 2012 edition, they were led by confirmed experts and younger pioneers to several outposts of current research in stable and unstable homotopy theory, including category theory and classifying spaces, Goodwillie calculus, functor homology, K -theory, operads, moduli spaces and automorphism groups of manifolds. Returning to solid ground in the lunch breaks, the newcomers discovered the verticality of the nearby paths, while the habitués merrily debated the best order in which to stroll them this year. There was a hint of nostalgia in the late evening conversations, maybe distilled by the rumor that the Hôtel Mont-Collon might soon have to close down.

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

- US National Science Foundation,
- DFG Leibniz award of Prof. Wolfgang Lück,
- Faculty of Basic Sciences, EPFL,
- Conférence universitaire de Suisse occidentale,
- Fondation pour l'avancement des sciences mathématiques en Suisse.

We are very grateful to the owners and personnel of the Hôtel Mont-Collon in Arolla for their friendliness. It was again a great pleasure to organize a conference with their help.

Our warmest thanks go to the speakers and to all the participants, to those whose theorems appear in these proceedings, and to the referees for their anonymous work and timely reports. Many thanks also to Chris Thivierge at the AMS for her efficient help and guidance.

Ch. Ausoni, K. Hess, B. Johnson, W. Lück and J. Scherer



Tête Blanche (3710m), 20 August 2012, in memory of namesake topologists.

List of Conference Talks

Monday, August 20

Arthur Bartels *The 3-category of conformal nets*

Tuesday, August 21

Michael Ching *Calculus of homotopy functors and modules over the little disc operads*

David Barnes *Orthogonal calculus and model categories*

Clemens Berger *Goodwillie calculus for Gamma spaces*

Kathryn Lesh *Bredon homology of partition complexes*

Antoine Touzé *From representation theory of GL_n to algebraic topology computations*

Short communications

Anssi Lahtinen *String topology of classifying spaces*

Irakli Patchkoria *Rigidity in equivariant stable homotopy theory*

Oriol Raventos *Adams representability for well generated triangulated categories*

Ilias Amrani *Cofibrantly generated model structure on infinity groupoids*

Wednesday, August 22

Teena Gerhardt *Algebraic K-theory and Witt vectors*

Steffen Sagave *Logarithmic structures on K-theory spectra*

Gunnar Carlsson *Representations and K-theory of fields*

Thursday, August 23

- Ian Leary *A metric Kan-Thurston theorem*
Oscar Randal-Williams *Stable moduli spaces of high dimensional manifolds*
Ib Madsen *Automorphism groups of some highly connected manifolds*
Michael Joachim *Classification of twists in equivariant K-theory for proper and discrete actions*
Birgit Richter *A spectral sequence for the homology of a finite algebraic delooping*

Friday, August 24

- Wojciech Chachólski *Idempotent deformations and dynamics of finite groups*
Kári Ragnarsson *A homotopy characterization of p -completed classifying spaces of finite groups*
Ran Levi *The algebraic structure of finite loop spaces*
Benoit Fresse *Rational homotopy of operads and little discs*
Andy Tonks *Unital associahedra*

Saturday, August 25

- Angélica Osorno *Towards modeling homotopy n -types of spectra*
Constanze Roitzheim *Simplicial, stable and local framings*
Dan Dugger *Motivic stable homotopy groups of spheres*
Gonçalo Tabuada *The fundamental isomorphism conjecture via non-commutative motives*
Brayton Gray *Some new techniques in unstable homotopy theory*

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This volume contains the proceedings of the Fourth Arolla Conference on Algebraic Topology, which took place in Arolla, Switzerland, from August 20–25, 2012.

The papers in this volume cover topics such as category theory and homological algebra, functor homology, algebraic K -theory, cobordism categories, group theory, generalized cohomology theories and multiplicative structures, the theory of iterated loop spaces, Smith–Toda complexes, and topological modular forms.

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