

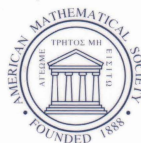
# CONTEMPORARY MATHEMATICS

346

## Homotopy Theory: Relations with Algebraic Geometry, Group Cohomology, and Algebraic $K$ -Theory

An International Conference  
on Algebraic Topology  
March 24–28, 2002  
Northwestern University

Paul Goerss  
Stewart Priddy  
Editors



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## Preface

As part of its continuing series of Emphasis Years in Mathematics, Northwestern University hosted an International Conference on Algebraic Topology, March 24-28, 2002. The theme of the conference was developing some of the new connections between homotopy theory and other areas of mathematics, including algebraic geometry, cohomology of groups, algebraic  $K$ -theory, and  $A^1$  homotopy theory. Two highlights were Mike Hopkins's announcement of the topological orientation of string cobordism to topological modular forms and Ib Madsen's talk on his recent proof with Michael Weiss of the Generalized Mumford Conjecture. Several of the lectures were invited surveys in areas of current interest.

We gratefully acknowledge the generous support provided by the National Science Foundation and Northwestern University.

Conference participants were invited to submit original research papers related to the theme of the conference. All submissions were refereed to usual journal standards.

The following is a list of plenary lectures:

- Alejandro Adem (University of Wisconsin): Constructing and deconstructing finite group actions
- Ralph Cohen (Stanford University): String field theory from a homotopy point of view
- William Dwyer (University of Notre Dame): Cellular approximation in algebra and topology
- Benoit Fresse (University of Nice): Koszul duality of operads and homotopical algebra in positive characteristic
- John Greenlees (University of Sheffield): Rational  $S^1$ -equivariant elliptic cohomology
- Lars Hesselholt (MIT):  $K$ -theory of a henselian discrete valuation field with non-perfect residue field
- Mike Hopkins (MIT): The multiplicative group of elliptic cohomology
- Ran Levi (University of Aberdeen):  $p$ -Local finite groups—the homotopy theory of fusion systems
- Ib Madsen (University of Aarhus): The generalized Mumford Conjecture
- Jack Morava (Johns Hopkins University):  $HP_{-\infty}^{\infty}$  and a  $4D$  analog of Madsen-Tillmann
- Jim McClure (Purdue University): Batalin-Vilkovisky structures in Hochschild cohomology

Birgit Richter (University of Bonn): Topological André-Quillen cohomology—an overview

Burt Totaro (University of Cambridge): The weight filtration for algebraic varieties, and topology

Mark Walker (University of Nebraska): Interpolating algebraic and topological  $K$ -theory

We thank Ms. Melanie Rubin for her editorial assistance in preparing this volume and for her many hours of assistance in arranging the conference as well as the conference banquet.



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As part of its series of Emphasis Years in Mathematics, Northwestern University hosted an International Conference on Algebraic Topology. The purpose of the conference was to develop new connections between homotopy theory and other areas of mathematics.

This proceedings volume grew out of that event. Topics discussed include algebraic geometry, cohomology of groups, algebraic  $K$ -theory, and  $\mathbb{A}^1$  homotopy theory. Among the contributors to the volume were Alejandro Adem, Ralph L. Cohen, Jean-Louis Loday, and many others.

The book is suitable for graduate students and research mathematicians interested in homotopy theory and its relationship to other areas of mathematics.

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