Rational Homotopy Type A Constructive Study Via The Theory Of The I Measure

#rational homotopy type #i measure theory #constructive mathematics #algebraic topology #homotopy theory

This constructive study investigates the rational homotopy type, employing the innovative framework of the I measure theory. It offers novel insights into algebraic topology, particularly for those researching constructive mathematics.

Rational Homotopy Type

This comprehensive monograph provides a self-contained treatment of the theory of I*-measure, or Sullivan's rational homotopy theory, from a constructive point of view. It centers on the notion of calculability which is due to the author himself, as are the measure-theoretical and constructive points of view in rational homotopy. The I*-measure is shown to differ from other homology and homotopy measures in that it is calculable with respect to most of the important geometric constructions encountered in algebraic topology. This approach provides a new method of treatment and leads to various new results. In particular, an axiomatic system of I*-measure is formulated, quite different in spirit from the usual Eilenberg-Steenrod axiomatic system for homology, and giving at the same time an algorithmic method of computation of the I*-measure in concrete cases. The book will be of interest to researchers in rational homotopy theory and will provide them with new ideas and lines of research to develop further.

Rational Homotopy Type

Twentieth-century China has been caught between a desire to increase its wealth and power in line with other advanced nations, which, by implication, means copying their institutions, practices and values, whilst simultaneously seeking to preserve China’s independence and historically formed identity. Over time, Chinese philosophers, writers, artists and politicians have all sought to reconcile these goals and this book shows how this search for a Chinese way penetrated even the most central, least contested area of modernity: science. Reviving Ancient Chinese Mathematics is a study of the life of one of modern China’s most admired scientific figures, the mathematician Wu Wen-Tsun. Negotiating the conflict between progress and tradition, he found a path that not only ensured his political and personal survival, but which also brought him renown as a mathematician of international status who claimed that he stood outside the dominant western tradition of mathematics. Wu Wen-Tsun’s story highlights crucial developments and contradictions in twentieth -century China, the significance of which extends far beyond the field of mathematics. On one hand lies the appeal of radical scientific modernity, "mechanisation" in all its forms, and competitiveness within the international scientific community. On

the other is an anxiety to preserve national traditions and make them part of the modernisation project. Moreover, Wu's intellectual development also reflects the complex relationship between science and Maoist ideology, because his turn to history was powered by his internalisation of certain aspects of Maoist ideology, including its utilitarian philosophy of science. This book traces how Wu managed to combine political success and international scientific eminence, a story that has wider implications for a new century of increasing Chinese activity in the sciences. As such, it will be of great interest to students and scholars of Chinese history, the history of science and the history and philosophy of mathematics.

Reviving Ancient Chinese Mathematics

does not need QB copy

Effective Algebraic Topology

Vols. for 1980- issued in three parts: Series, Authors, and Titles.

Publicationes mathematicae

This book introduces a new point-set level approach to stable homotopy theory that has already had many applications and promises to have a lasting impact on the subject. Given the sphere spectrum S, the authors construct an associative, commutative, and unital smash product in a complete and cocomplete category of ``$S$-modules'' whose derived category is equivalent to the classical stable homotopy category. This construction allows for a simple and algebraically manageable definition of ``S-algebras'' and ``commutative S-algebras'' in terms of associative, or associative and commutative, products $R\\wedge SR \\longrightarrow R$. These notions are essentially equivalent to the earlier notions of $A {\\infty $ and $E {\\infty $ ring spectra, and the older notions feed naturally into the new framework to provide plentiful examples. There is an equally simple definition of R-modules in terms of maps $R\\wedge SM\\longrightarrow M$. When R is commutative, the category of R-modules also has a

Revue Roumaine de Mathématiques Pures Et Appliquées

This book is the product of a yearlong collaboration at the Institute for Advanced Study. It describes (the beta version of) a new language for mathematics, which may some day replace set theory.

International Books in Print

This book is based on lectures given at a summer school on motivic homotopy theory at the Sophus Lie Centre in Nordfjordeid, Norway, in August 2002. Aimed at graduate students in algebraic topology and algebraic geometry, it contains background material from both of these fields, as well as the foundations of motivic homotopy theory. It will serve as a good introduction as well as a convenient reference for a broad group of mathematicians to this important and fascinating new subject. Vladimir Voevodsky is one of the founders of the theory and received the Fields medal for his work, and the other authors have all done important work in the subject.

Annales de l'Institut Fourier

This book provides the theory for stratified spaces, along with important examples and applications, that is analogous to the surgery theory for manifolds. In the first expository account of this field, Weinberger provides topologists with a new way of looking at the classification theory of singular spaces with his original results. Divided into three parts, the book begins with an overview of modern high-dimensional manifold theory. Rather than including complete proofs of all theorems, Weinberger demonstrates key constructions, gives convenient formulations, and shows the usefulness of the technology. Part II offers the parallel theory for stratified spaces. Here, the topological category is most completely developed using the methods of "controlled topology." Many examples illustrating the topological invariance and noninvariance of obstructions and characteristic classes are provided. Applications for embeddings and immersions of manifolds, for the geometry of group actions, for algebraic varieties, and for rigidity theorems are found in Part III. This volume will be of interest to topologists, as well as mathematicians in other fields such as differential geometry, operator theory, and algebraic geometry.

Books in Series

This text contains a detailed introduction to general topology and an introduction to algebraic topology via its most classical and elementary segment. Proofs of theorems are separated from their formulations and are gathered at the end of each chapter, making this book appear like a problem book and also giving it appeal to the expert as a handbook. The book includes about 1,000 exercises.

The Cumulative Book Index

This volume introduces equivariant homotopy, homology, and cohomology theory, along with various related topics in modern algebraic topology. It explains the main ideas behind some of the most striking recent advances in the subject. The book begins with a development of the equivariant algebraic topology of spaces culminating in a discussion of the Sullivan conjecture that emphasizes its relationship with classical Smith theory. It then introduces equivariant stable homotopy theory, the equivariant stable homotopy category, and the most important examples of equivariant cohomology theories. The basic machinery that is needed to make serious use of equivariant stable homotopy theory is presented next, along with discussions of the Segal conjecture and generalized Tate cohomology.Finally, the book gives an introduction to 'brave new algebra', the study of point-set level algebraic structures on spectra and its equivariant applications. Emphasis is placed on equivariant complex cobordism, and related results on that topic are presented in detail. It introduces many of the fundamental ideas and concepts of modern algebraic topology. It presents comprehensive material not found in any other book on the subject. It provides a coherent overview of many areas of current interest in algebraic topology. It surveys a great deal of material, explaining main ideas without getting bogged down in details.

Books in Series, 1876-1949

Algebraic topology is a fascinating and dynamic field at the crossroads of topology and algebra, both pure and applied. This volume is the first comprehensive, book-form treatment of the subject. It provides a swift walk through the main basic tools of algebraic topology, including homology and homotopy groups, as well as an in-depth discussion of the major research techniques of rational homotopy theory. The book will be of interest to students, professors, and researchers, as well as anyone interested in discovering real applications of mathematics in fields which affect our daily lives, including medicine, imagery, cosmic radiation, and writing systems.

American Book Publishing Record

1981- in 2 v.: v.1, Subject index; v.2, Title index, Publisher/title index, Association name index, Acronym index, Key to publishers' and distributors' abbreviations.

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The appearance of mapping class groups in mathematics is ubiquitous. The book presents 23 papers containing problems about mapping class groups, the moduli space of Riemann surfaces, Teichmuller geometry, and related areas. Each paper focusses completely on open problems and directions. The problems range in scope from specific computations, to broad programs. The goal is to have a rich source of problems which have been formulated explicitly and accessibly. The book is divided into four parts. Part I contains problems on the combinatorial and (co)homological group-theoretic aspects of mapping class groups, and the way in which these relate to problems in geometry and topology. Part II concentrates on connections with classification problems in 3-manifold theory, the theory of symplectic 4-manifolds, and algebraic geometry. A wide variety of problems, from understanding billiard trajectories to the classification of Kleinian groups, can be reduced to differential and synthetic geometry problems about moduli space. Such problems and connections are discussed in Part III. Mapping class groups are related, both concretely and philosophically, to a number of other groups, such as braid groups, lattices in semisimple Lie groups, and automorphism groups of free groups. Part IV concentrates on problems surrounding these relationships. This book should be of interest to anyone studying geometry, topology, algebraic geometry or infinite groups. It is meant to provide inspiration for everyone from graduate students to senior researchers.

Summaries of Projects Completed in Fiscal Year ...

Vols. for 1973- include the following subject areas: Biological sciences, Agriculture, Chemistry, Environmental sciences, Health sciences, Engineering, Mathematics and statistics, Earth sciences, Physics, Education, Psychology, Sociology, Anthropology, History, Law & political science, Business

& economics, Geography & regional planning, Language & literature, Fine arts, Library & information science, Mass communications, Music, Philosophy and Religion.

Summaries of Projects Completed

This volume is the first comprehensive treatment of combinatorial algebraic topology in book form. The first part of the book constitutes a swift walk through the main tools of algebraic topology. Readers - graduate students and working mathematicians alike - will probably find particularly useful the second part, which contains an in-depth discussion of the major research techniques of combinatorial algebraic topology. Although applications are sprinkled throughout the second part, they are principal focus of the third part, which is entirely devoted to developing the topological structure theory for graph homomorphisms.

Summaries of Projects Completed in Fiscal Year ...

The 1970s saw the appearance and development in categoricity theory of a tendency to focus on the study and description of uncountably categorical theories in various special classes defined by natural algebraic or syntactic conditions. There have thus been studies of uncountably categorical theories of groups and rings, theories of a one-place function, universal theories of semigroups, quasivarieties categorical in infinite powers, and Horn theories. In Uncountably Categorical Theories , this research area is referred to as the special classification theory of categoricity. Zilber's goal is to develop a structural theory of categoricity, using methods and results of the special classification theory, and to construct on this basis a foundation for a general classification theory of categoricity, that is, a theory aimed at describing large classes of uncountably categorical structures not restricted by any syntactic or algebraic conditions.

Rings, Modules, and Algebras in Stable Homotopy Theory

This book is an attempt to give a systematic presentation of both logic and type theory from a categorical perspective, using the unifying concept of fibred category. Its intended audience consists of logicians, type theorists, category theorists and (theoretical) computer scientists.

Homotopy Type Theory

A thorough and accessible introduction to a range of key ideas in type systems for programming language. The study of type systems for programming languages now touches many areas of computer science, from language design and implementation to software engineering, network security, databases, and analysis of concurrent and distributed systems. This book offers accessible introductions to key ideas in the field, with contributions by experts on each topic. The topics covered include precise type analyses, which extend simple type systems to give them a better grip on the run time behavior of systems; type systems for low-level languages; applications of types to reasoning about computer programs; type theory as a framework for the design of sophisticated module systems; and advanced techniques in ML-style type inference. Advanced Topics in Types and Programming Languages builds on Benjamin Pierce's Types and Programming Languages (MIT Press, 2002); most of the chapters should be accessible to readers familiar with basic notations and techniques of operational semantics and type systems—the material covered in the first half of the earlier book. Advanced Topics in Types and Programming Languages can be used in the classroom and as a resource for professionals. Most chapters include exercises, ranging in difficulty from quick comprehension checks to challenging extensions, many with solutions.

Catalogue, Books and Journals in Advanced Mathematics

This ENCYCLOPAEDIA OF MATHEMATICS aims to be a reference work for all parts of mathe matics. It is a translation with updates and editorial comments of the Soviet Mathematical Encyclopaedia published by 'Soviet Encyclopaedia Publishing House' in five volumes in 1977-1985. The annotated translation consists of ten volumes including a special index volume. There are three kinds of articles in this ENCYCLOPAEDIA. First of all there are survey-type articles dealing with the various main directions in mathematics (where a rather fine subdivi sion has been used). The main requirement for these articles has been that they should give a reasonably complete up-to-date account of the current state of affairs in these areas and that they should be maximally accessible. On the whole, these articles should be understandable to mathematics students in their first specialization years, to graduates from

other mathematical areas and, depending on the specific subject, to specialists in other domains of science, en gineers and teachers of mathematics. These articles treat their material at a fairly general level and aim to give an idea of the kind of problems, techniques and concepts involved in the area in question. They also contain background and motivation rather than precise statements of precise theorems with detailed definitions and technical details on how to carry out proofs and constructions. The second kind of article, of medium length, contains more detailed concrete problems, results and techniques.

Motivic Homotopy Theory

Many Christians have an easier time being saved by grace than they do living in grace every day. But grace is at the center of the life God calls us to--and reflects the heart of the One who calls.These studies in Grace will help you make the connection between grace as a remote biblical concept and grace as a lifestyle--a reality you experience day in, day out. Through an unfolding study of Psalm 23, you'll learn how God--our Good Shepherd--is for you, how he longs to walk with you through temptation, sorrow, and even deep regret. You'll discover God's desire to make his joy your joy. Throughout, you'll learn how enduring, powerful, and life-affirming God's work in your life can be---and rediscover why it's called amazing grace.Leader's guide included!Grace group sessions are:Living in GraceGrace for RegretsSustaining GraceDelighting in GraceA Legacy of GraceGrace ForeverGrace to Share

Mathematical Reviews

This innovative monograph explores a new mathematical formalism in higher-order temporal logic for proving properties about the behavior of systems. Developed by the authors, the goal of this novel approach is to explain what occurs when multiple, distinct system components interact by using a category-theoretic description of behavior types based on sheaves. The authors demonstrate how to analyze the behaviors of elements in continuous and discrete dynamical systems so that each can be translated and compared to one another. Their temporal logic is also flexible enough that it can serve as a framework for other logics that work with similar models. The book begins with a discussion of behavior types, interval domains, and translation invariance, which serves as the groundwork for temporal type theory. From there, the authors lay out the logical preliminaries they need for their temporal modalities and explain the soundness of those logical semantics. These results are then applied to hybrid dynamical systems, differential equations, and labeled transition systems. A case study involving aircraft separation within the National Airspace System is provided to illustrate temporal type theory in action. Researchers in computer science, logic, and mathematics interested in topos-theoretic and category-theory-friendly approaches to system behavior will find this monograph to be an important resource. It can also serve as a supplemental text for a specialized graduate topics course.

The Topological Classification of Stratified Spaces

Annotation. The book is intended as a text for a two-semester course in topology and algebraic topology at the advanced undergraduate orbeginning graduate level. There are over 500 exercises, 114 figures, numerous diagrams. The general direction of the book is towardhomotopy theory with a geometric point of view. This book would providea more than adequate background for a standard algebraic topology coursethat begins with homology theory. For more information seewww.bangor.ac.uk/r.brown/topg-pds.htmlThis version dated April 19, 2006, has a number of corrections made.

Elementary Topology

This textbook introduces geometric measure theory through the notion of currents. Currents, continuous linear functionals on spaces of differential forms, are a natural language in which to formulate types of extremal problems arising in geometry, and can be used to study generalized versions of the Plateau problem and related questions in geometric analysis. Motivating key ideas with examples and figures, this book is a comprehensive introduction ideal for both self-study and for use in the classroom. The exposition demands minimal background, is self-contained and accessible, and thus is ideal for both graduate students and researchers.

Equivariant Homotopy and Cohomology Theory

Pure and Applied Algebraic Topology