Geometric Invariant Theory Ergebnisse Der Mathematik Und Ihrer Grenzgebiete 2 Folge

Invariant Theory of Finite GroupsSIAM Journal on Control and OptimizationGeometric Methods in Computer VisionCompositio MathematicaRational Curves on Algebraic VarietiesAlgorithms in Invariant TheoryAlgebraic Homogeneous Spaces and Invariant TheoryAlgebraic Geometry Angers 1979Quasi-projective Moduli for Polarized ManifoldsGeometric Invariant TheoryReal Algebraic GeometryL2-Invariants: Theory and Applications to Geometry and K-TheoryMathematica ScandinavicaThe History of Modern MathematicsAlgebraic Geometry and Related TopicsTopological Methods in Quantum Field TheoriesGeometric Invariant Theory for Polarized CurvesThe Michigan Mathematical JournalGeometric Invariant TheoryErgebnisse der Mathematik und ihrer GrenzgebieteComputational Invariant TheoryBulletin of the American Mathematical SocietyReportGeometry & TopologyAlgebraic Geometry and Analytic GeometryAlgebraic Geometry 2000, AzuminoNumber TheoryGeometric Invariant Theory and Decorated Principal BundlesAlgèbre non commutative groupes quantiques et invariantsGeometric Invariant TheoryBulletin (new Series) of the American Mathematical SocietyThe Geometry of Some Special Arithmetic QuotientsCatalog of Copyright Entries. Third SeriesGeometry of Toric VarietiesThe History of Modern Mathematics: Ideas and their

receptionSingularitiesErgebnisse der Mathematik und ihrer GrenzgebieteBooks in SeriesThe Curves Seminar at Queen'sQueen's Papers in Pure and Applied Mathematics

Invariant Theory of Finite Groups

In July 1996, a conference was organized by the editors of this volume at the Mathematische Forschungsinstitut Oberwolfach to honour Egbert Brieskorn on the occasion of his 60th birthday. Most of the mathematicians invited to the conference have been influenced in one way or another by Brieskorn's work in singularity theory. It was the first time that so many people from the Russian school could be present at a conference in singularity theory outside Russia. This volume contains papers on singularity theory and its applications, written by participants of the conference. In many cases, they are extended versions of the talks presented there. The diversity of subjects of the contributions reflects singularity theory's relevance to topology, analysis and geometry, combining ideas and techniques from all of these fields, as well as demonstrating the breadth of Brieskorn's own interests. This volume contains papers on singularity theory and its applications, written by participants of the conference. In many cases, they are extended versions of the talks presented there. The diversity of subjects of the contributions reflects singularity theory's relevance to topology, analysis and

geometry, combining ideas and techniques from all of these fields, as well as demonstrates the breadth of Brieskorn's own interests.

SIAM Journal on Control and Optimization

Fully refereed international journal dealing with all aspects of geometry and topology and their applications.

Geometric Methods in Computer Vision

Compositio Mathematica

Rational Curves on Algebraic Varieties

Algorithms in Invariant Theory

This volume presents the proceedings of the 20th International Workshop on Graph-Theoretic Concepts in Computer Science (WG '94), held in Herrsching, Germany in

June 1994. The volume contains 32 thoroughly revised papers selected from 66 submissions and provides an up-to-date snapshot of the research performed in the field. The topics addressed are graph grammars, treewidth, special graph classes, algorithms on graphs, broadcasting and architecture, planar graphs and related problems, and special graph problems.

Algebraic Homogeneous Spaces and Invariant Theory

Algebraic Geometry Angers 1979

Quasi-projective Moduli for Polarized Manifolds

Geometric Invariant Theory

Real Algebraic Geometry

Ten years after the first Rennes international meeting on real algebraic geometry,

the second one looked at the developments in the subject during the intervening decade - see the 6 survey papers listed below. Further contributions from the participants on recent research covered real algebra and geometry, topology of real algebraic varieties and 16thHilbert problem, classical algebraic geometry, techniques in real algebraic geometry, algorithms in real algebraic geometry, semialgebraic geometry, real analytic geometry. CONTENTS: Survey papers: M. Knebusch: Semialgebraic topology in the last ten years.- R. Parimala: Algebraic and topological invariants of real algebraic varieties.- Polotovskii, G.M.: On the classification of decomposing plane algebraic curves.- Scheiderer, C.: Real algebra and its applications to geometry in the last ten years: some major developments and results.- Shustin, E.L.: Topology of real plane algebraic curves.- Silhol, R.: Moduli problems in real algebraic geometry. Further contributions by: S. Akbulut and H. King; C. Andradas and J. Ruiz; A. Borobia; L. Br|cker; G.W. Brumfield; A. Castilla; Z. Charzynski and P. Skibinski; M. Coste and M. Reguiat; A. Degtyarev; Z. Denkowska; J.-P. Francoise and F. Ronga; J.M. Gamboa and C. Ueno; D. Gondard-Cozette; I.V. Itenberg; P. Jaworski; A. Korchagin; T. Krasinksi and S. Spodzieja; K. Kurdyka; H. Lombardi; M. Marshall and L. Walter; V.F. Mazurovskii; G. Mikhalkin; T. Mostowski and E. Rannou; E.I. Shustin; N. Vorobjov.

L2-Invariants: Theory and Applications to Geometry and K-Theory

Mathematica Scandinavica

The History of Modern Mathematics

"Geometric Invariant Theory" by Mumford/Fogarty (the firstedition was published in 1965, a second, enlarged editonappeared in 1982) is the standard reference on applicationsof invariant theory to the construction of moduli spaces.This third, revised edition has been long awaited for by themathematical community. It is now appearing in a completelyupdated and enlarged version with an additional chapter onthe moment map by Prof. Frances Kirwan (Oxford) and a fullyupdated bibliography of work in this area.The book deals firstly with actions of algebraic groups onalgebraic varieties, separating orbits by invariants andconstructionquotient spaces; and secondly with applicationsof this theory to the construction of moduli spaces.It is a systematic exposition of the geometric aspects ofthe classical theory of polynomial invariants.

Algebraic Geometry and Related Topics

The aim of this book is to provide an introduction to the structure theory of higher

dimensional algebraic varieties by studying the geometry of curves, especially rational curves, on varieties. The main applications are in the study of Fano varieties and of related varieties with lots of rational curves on them. This Ergebnisse volume provides the first systematic introduction to this field of study. The book contains a large number of examples and exercises which serve to illustrate the range of the methods and also lead to many open questions of current research.

Topological Methods in Quantum Field Theories

This book is both an easy-to-read textbook for invariant theory and a challenging research monograph that introduces a new approach to the algorithmic side of invariant theory. Students will find the book an easy introduction to this "classical and new" area of mathematics. Researchers in mathematics, symbolic computation, and computer science will get access to research ideas, hints for applications, outlines and details of algorithms, examples and problems.

Geometric Invariant Theory for Polarized Curves

We investigate GIT quotients of polarized curves. More specifically, we study the GIT problem for the Hilbert and Chow schemes of curves of degree d and genus g

in a projective space of dimension d-g, as d decreases with respect to g. We prove that the first three values of d at which the GIT quotients change are given by d=a(2g-2) where a=2, 3.5, 4. We show that, for a>4, L. Caporaso's results hold true for both Hilbert and Chow semistability. If 3.5a

The Michigan Mathematical Journal

The questions that have been at the center of invariant theory since the 19th century have revolved around the following themes: finiteness, computation, and special classes of invariants. This book begins with a survey of many concrete examples chosen from these themes in the algebraic, homological, and combinatorial context. In further chapters, the authors pick one or the other of these questions as a departure point and present the known answers, open problems, and methods andtools needed to obtain these answers. Chapter 2 deals with algebraic finiteness. Chapter 3 deals with combinatorial finiteness. Chapter 4 presents Noetherian finiteness. Chapter 5 addresses homological finiteness. Chapter 6 presents special classes of invariants, which deal with modular invarianttheory and its particular problems and features. Chapter 7 collects results for special classes of invariants and coinvariants such as (pseudo) reflection groups and representations of low degree. If the ground field is finite, ad The book contains numerous examples to illustrate the theory, often of more than passing interest, and an appendix on commutative graded algebra, which provides some of

the required basic background. There is an extensive reference list to provide the reader withorientation to the vast literature.

Geometric Invariant Theory

The seventh meeting of the Contact Franco-Belge was held in Reims in June 1995. The goal of the meeting was the presentation of recent advances in several related areas where a non-commutative algebraic approach is necessary. The first part of the book contains five articles on new progress in classical problems; the second part, five papers on Hopf algebras, quantum groups and their representations; and the third part, six papers on invariant theory and representation theory. Two chapters are in French, remaining chapters are in English.

Ergebnisse der Mathematik und ihrer Grenzgebiete

This standard reference on applications of invariant theory to the construction of moduli spaces is a systematic exposition of the geometric aspects of classical theory of polynomial invariants. This new, revised edition is completely updated and enlarged with an additional chapter on the moment map by Professor Frances Kirwan. It includes a fully updated bibliography of work in this area.

Computational Invariant Theory

Bulletin of the American Mathematical Society

Report

Geometric Invariant Theory (GIT) is developed in this text within the context of algebraic geometry over the real and complex numbers. This sophisticated topic is elegantly presented with enough background theory included to make the text accessible to advanced graduate students in mathematics and physics with diverse backgrounds in algebraic and differential geometry. Throughout the book, examples are emphasized. Exercises add to the reader's understanding of the material; most are enhanced with hints. The exposition is divided into two parts. The first part, 'Background Theory', is organized as a reference for the rest of the book. It contains two chapters developing material in complex and real algebraic geometry and algebraic groups that are difficult to find in the literature. Chapter 1 emphasizes the relationship between the Zariski topology and the canonical Hausdorff topology of an algebraic variety over the complex numbers. Chapter 2 develops the interaction between Lie groups and algebraic groups. Part 2,

'Geometric Invariant Theory' consists of three chapters (3–5). Chapter 3 centers on the Hilbert–Mumford theorem and contains a complete development of the Kempf–Ness theorem and Vindberg's theory. Chapter 4 studies the orbit structure of a reductive algebraic group on a projective variety emphasizing Kostant's theory. The final chapter studies the extension of classical invariant theory to products of classical groups emphasizing recent applications of the theory to physics.

Geometry & Topology

This book is about the computational aspects of invariant theory. Of central interest is the question how the invariant ring of a given group action can be calculated. Algorithms for this purpose form the main pillars around which the book is built. There are two introductory chapters, one on Gröbner basis methods and one on the basic concepts of invariant theory, which prepare the ground for the algorithms. Then algorithms for computing invariants of finite and reductive groups are discussed. Particular emphasis lies on interrelations between structural properties of invariant rings and computational methods. Finally, the book contains a chapter on applications of invariant theory, covering fields as disparate as graph theory, coding theory, dynamical systems, and computer vision. The book is intended for postgraduate students as well as researchers in geometry, computer algebra, and, of course, invariant theory. The text is enriched with numerous

explicit examples which illustrate the theory and should be of more than passing interest. More than ten years after the first publication of the book, the second edition now provides a major update and covers many recent developments in the field. Among the roughly 100 added pages there are two appendices, authored by Vladimi r Popov, and an addendum by Norbert A'Campo and Vladimir Popov.

Algebraic Geometry and Analytic Geometry

In algebraic topology some classical invariants - such as Betti numbers and Reidemeister torsion - are defined for compact spaces and finite group actions. They can be generalized using von Neumann algebras and their traces, and applied also to non-compact spaces and infinite groups. These new L2-invariants contain very interesting and novel information and can be applied to problems arising in topology, K-Theory, differential geometry, non-commutative geometry and spectral theory. The book, written in an accessible manner, presents a comprehensive introduction to this area of research, as well as its most recent results and developments.

Algebraic Geometry 2000, Azumino

Number Theory

The invariant theory of non-reductive groups has its roots in the 19th century but has seen some very interesting developments in the past twenty years. This book is an exposition of several related topics including observable subgroups, induced modules, maximal unipotent subgroups of reductive groups and the method of U-invariants, and the complexity of an action. Much of this material has not appeared previously in book form. The exposition assumes a basic knowledge of algebraic groups and then develops each topic systematically with applications to invariant theory. Exercises are included as well as many examples, some of which are related to geometry and physics.

Geometric Invariant Theory and Decorated Principal Bundles

Toric varieties form a beautiful class of algebraic varieties, which are often used as a testing ground for verifying general conjectures in algebraic geometry, for example, in Hilbert schemes, singularity theory, Mori theory, and so on. This volume gathers expanded versions of lectures presented during the summer school of ``Geometry of Toric Varieties'' in Grenoble (France). These lectures were given during the second and third weeks of the school. (The first week was devoted to introductory material.) The paper by D. Cox is an overview of recent work in

toric varieties and its applications, putting the other contributions of the volume into perspective.

Algèbre non commutative groupes quantiques et invariants

The book starts with an introduction to Geometric Invariant Theory (GIT). The fundamental results of Hilbert and Mumford are exposed as well as more recent topics such as the instability flag, the finiteness of the number of quotients, and the variation of quotients. In the second part, GIT is applied to solve the classification problem of decorated principal bundles on a compact Riemann surface. The solution is a quasi-projective moduli scheme which parameterizes those objects that satisfy a semistability condition originating from gauge theory. The moduli space is equipped with a generalized Hitchin map. Via the universal Kobayashi-Hitchin correspondence, these moduli spaces are related to moduli spaces of solutions of certain vortex type equations. Potential applications include the study of representation spaces of the fundamental group of compact Riemann surfaces. The book concludes with a brief discussion of generalizations of these findings to higher dimensional base varieties, positive characteristic, and parabolic bundles. The text is fairly self-contained (e.g., the necessary background from the theory of principal bundles is included) and features numerous examples and exercises. It addresses students and researchers with a working knowledge of elementary algebraic geometry.

Geometric Invariant Theory

Bulletin (new Series) of the American Mathematical Society

Includes Part 1, Number 1: Books and Pamphlets, Including Serials and Contributions to Periodicals (January - June)

The Geometry of Some Special Arithmetic Quotients

Catalog of Copyright Entries. Third Series

The International Symposium on Algebraic Geometry and Related Topics was held in Incheon, the Republic of Korea in 1992. In this work, the speakers provide an expanded version of their talks, which serve as an introduction to various aspects of mathematics.

Geometry of Toric Varieties

This conference proceedings volume contains survey and research articles on

topics of current interest written by leading international experts. The topic of the symposium was ``Interactions of Algebraic Geometry, Hodge Theory, and Logarithmic Geometry from the Viewpoint of Degenerations''. The book contains four surveys on 1) pencils of algebraic curves by T. Ashikaga and K. Konno; 2) integral p-adic Hodge theory by C. Breuil; 3) Hodge-Arakelov theory of elliptic curves by S. Mochizuki; and 4) refined cycle maps by S. Saito. Also included are two results by Gabber on absolute purity theorem written by K. Fujiwara and research articles on the Picard-Lefschetz formula by L. Illusie, moduli spaces of rational elliptic surfaces by G. Heckman and E. Looijenga, moduli of curves of genus 4 by S. Kondo, and logarithmic Hodge theory by K. Kato, C. Nakayama, and S. Usui and its application to geometry by S. Saito. The volume is intended for researchers interested in algebraic geometry, particularly in the study of families of algebraic varieties and Hodge structures.

The History of Modern Mathematics: Ideas and their reception

Singularities

Ergebnisse der Mathematik und ihrer Grenzgebiete

Books in Series

The Curves Seminar at Queen's

Queen's Papers in Pure and Applied Mathematics

The concept of moduli goes back to B. Riemann, who shows in [68] that the isomorphism class of a Riemann surface of genus 9 ~ 2 depends on 3g - 3 parameters, which he proposes to name "moduli". A precise formulation of global moduli problems in algebraic geometry, the definition of moduli schemes or of algebraic moduli spaces for curves and for certain higher dimensional manifolds have only been given recently (A. Grothendieck, D. Mumford, see [59]), as well as solutions in some cases. It is the aim of this monograph to present methods which allow over a field of characteristic zero to construct certain moduli schemes together with an ample sheaf. Our main source of inspiration is D. Mumford's "Geometric In variant Theory". We will recall the necessary tools from his book [59] and prove the "Hilbert-Mumford Criterion" and some modified version for the stability of points under group actions. As in [78], a careful study of positivity

proper ties of direct image sheaves allows to use this criterion to construct moduli as quasi-projective schemes for canonically polarized manifolds and for polarized manifolds with a semi-ample canonical sheaf.