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Arithmetic, Geometry, Cryptography, and Coding Theory 2009 Complex Analysis and Geometry *Dessins d'Enfants on Riemann Surfaces* **MSRI** *Geometry, Topology, and Mathematical Physics Women in Numbers 2: Research Directions in Number Theory Random Curves* **The Moduli Space of Curves** <u>Experimental Mathematics</u> **Progress in Galois Theory Galois Groups and Fundamental Groups Algorithms and Classification in Combinatorial Group Theory Noncommutative Curves in Grothendieck Categories** *Mirzakhani's Curve Counting and Geodesic Currents* **Algorithmic Number Theory Computational Algebraic and Analytic Geometry** <u>Birational Geometry and Moduli Spaces</u> <u>The Eightfold Way</u> **Algorithmic Number Theory** *Handbook of Elliptic and Hyperelliptic Curve Cryptography Handbook and Atlas of Curves* **Commutative Algebra and Noncommutative Algebraic Geometry** *Heegner Points and Rankin L-Series* <u>Progress in Cryptology - INDOCRYPT 2002</u> **Process Integration for Resource Conservation** <u>A History of Abstract Algebra</u> *Galois Covers, Grothendieck-Teichmüller Theory and Dessins d'Enfants Current Topics in Complex Algebraic Geometry* **Mathematical Constants II Curves, Jacobians, and Abelian Varieties** *Computational Aspects of Algebraic Curves* **Algebraic Geometry** *Random Matrix Models and Their Applications Group Theory From A Geometrical Viewpoint* **Wave Motion: Theory, Modelling, and Computation Many Rational Points** *Combinatorial Algebraic Geometry* **Three-Dimensional Geometry and Topology, Volume 1 Several Complex Variables The Shape of Inner Space**

Algebraic Geometry Mar 03 2020 Presents a compendium of papers selected from the Europroj conferences held in Catania and Barcelona. The text contains research in algebraic geometry with emphasis on classification problems, and in particular studies on the structure of moduli spaces of vector bundles, and on the classification of curves and surfaces.

Algorithmic Number Theory Aug 20 2021 The sixth Algorithmic Number Theory Symposium was held at the University of Vermont, in Burlington, from 13–18 June 2004.

The organization was a joint e?ort of number theorists from around the world. There were four invited talks at ANTS VI, by Dan Bernstein of the Univ- sity of Illinois at Chicago, Kiran Kedlaya of MIT, Alice Silverberg of Ohio State University, and Mark Watkins of Pennsylvania State University. Thirty cont- buted talks were presented, and a poster session was held. This volume contains the written versions of the contributed talks and three of the four invited talks. (Not included is the talk by Dan Bernstein.) ANTS in Burlington is the sixth in a series that began with ANTS I in 1994 at

Cornell University, Ithaca, New York, USA and continued at Universit́eB- deaux I, Bordeaux, France (1996), Reed College, Portland, Oregon, USA (1998), the University of Leiden, Leiden, The Netherlands (2000), and the University of Sydney, Sydney, Australia (2002). The proceedings have been published as volumes 877, 1122, 1423, 1838, and 2369 of Springer-Verlag's Lecture Notes in Computer Science series. The organizers of the 2004 ANTS conference express their special gratitude and thanks to John Cannon and Joe Buhler for invaluable behind-the-scenes advice.

Computational Aspects of Algebraic Curves Apr 03 2020 **Commutative Algebra and Noncommutative Algebraic Geometry** Jan 13 2021 This book surveys fundamental current topics in these two areas of research, emphasising the lively interaction between them. Volume 1 contains expository papers ideal for those entering the field. *Random Matrix Models and Their Applications* Jan 31 2020 Expository articles on random matrix theory emphasizing the exchange of ideas between the physical and mathematical communities.

Women in Numbers 2: Research Directions in Number Theory May 29 2022 The second Women in Numbers workshop (WIN2) was held November 6-11, 2011, at the Banff International Research Station (BIRS) in Banff, Alberta, Canada. During the workshop, group leaders presented open problems in various areas of number theory, and working groups tackled those problems in collaborations begun at the workshop and continuing long after. This volume collects articles written by participants of WIN2. Survey papers written by project leaders are designed to introduce areas of active research in number theory to advanced graduate students and recent PhDs. Original research articles by the project groups detail their work on the open problems tackled during and after WIN2. Other articles in this volume contain new research on related topics by women number theorists. The articles collected here encompass a wide range of topics in number theory including Galois representations, the Tamagawa number conjecture, arithmetic intersection formulas, Mahler measures, Newton polygons, the Dwork family, elliptic curves,

cryptography, and supercongruences. WIN2 and this Proceedings volume are part of the Women in Numbers network, aimed at increasing the visibility of women researchers' contributions to number theory and at increasing the participation of women mathematicians in number theory and related fields. This book is co-published with the Centre de Recherches Mathématiques. **Curves, Jacobians, and Abelian Varieties** May 05 2020 This volume contains the proceedings of an AMS-IMS-SIAM Joint Summer Research Conference on the Schottky Problem, held in June 1990 at the University of Massachusetts at Amherst. The conference explored various aspects of the Schottky problem of characterizing Jacobians of curves among all abelian varieties. Some of the articles study related themes, including the moduli of stable vector bundles on a curve, Prym varieties and intermediate Jacobians, and special Jacobians with exotic polarizations or product structures. *Handbook of Elliptic and Hyperelliptic Curve Cryptography* Mar 15 2021 The discrete logarithm problem based on elliptic and hyperelliptic curves has gained a lot of popularity as a cryptographic primitive. The main reason is that no subexponential algorithm for computing discrete logarithms on small genus curves is currently available, except in very special cases. Therefore curve-based cryptosystems require much smaller key sizes than RSA to attain the same security level. This makes them particularly attractive for implementations on memory-restricted devices like smart cards and in high-security applications. The Handbook of Elliptic and Hyperelliptic Curve Cryptography introduces the

theory and algorithms involved in curve-based cryptography. After a very detailed exposition of the mathematical background, it provides ready-to-implement algorithms for the group operations and computation of pairings. It explores methods for point counting and constructing curves with the complex multiplication method and provides the algorithms in an explicit manner. It also surveys generic methods to compute discrete logarithms and details index calculus methods for hyperelliptic curves. For some special curves the discrete logarithm problem can be transferred to an easier one; the consequences are explained and suggestions for good choices are given. The authors present applications to protocols for discrete-logarithm-based systems (including bilinear structures) and explain the use of elliptic and hyperelliptic curves in factorization and primality proving. Two chapters explore their design and efficient implementations in smart cards. Practical and theoretical aspects of side-channel attacks and countermeasures and a chapter devoted to (pseudo-)random number generation round off the exposition. The broad coverage of all- important areas makes this book a complete handbook of elliptic and hyperelliptic curve cryptography and an invaluable reference to anyone interested in this exciting field. **Process Integration for Resource Conservation** Oct 10 2020 To achieve environmental sustainability in industrial plants, resource conservation activities such as material recovery have begun incorporating process integration techniques for reusing and recycling water, utility gases, solvents, and solid waste. Process Integration for Resource

Conservation presents state-of-the-art, cost-effective techniques **Complex Analysis and Geometry** Oct 02 2022 Based on a conference held in Trento, Italy, and sponsored by the Centro Internazionale per la Ricera Matematica, this work presents advances in several complex variables and related topics such as transcendental algebraic geometry, infinite dimensional supermanifolds, and foliations. It covers the unfoldings of singularities, Levi foliations, Cauchy-Reimann manifolds, infinite dimensional supermanifolds, conformal structures, algebraic groups, instantons and more. **Arithmetic, Geometry, Cryptography, and Coding Theory 2009** Nov 03 2022 This volume contains the proceedings of the 12th conference on Arithmetic, Geometry, cryptography and coding Theory, held in Marseille, France from March 30 to April 3, 2009, as well as the first Geocrypt conference, held in pointe-a-pitre, guadeloupe, from April 27 to may 1, 2009, and the European science Foundation exploratory workshop on curves, coding Theory, and Cryptography, held in Marseille, France from March 25 to 29, 2009. The articles Contained in this volume come from three related symposia organized by the group Arithmetique et Theorie de I' Information in Marseille. The topics cover arithmetic properties of curves and higher dimensional varieties with applications to codes and cryptography. **Noncommutative Curves in Grothendieck Categories** Oct 22 2021 Experimental Mathematics Feb 23 2022 One of the traditional ways mathematical ideas and even new areas of mathematics are created is from experiments. One of the best-known

examples is that of the Fermat hypothesis, which was conjectured by Fermat in his attempts to find integer solutions for the famous Fermat equation. This hypothesis led to the creation of a whole field of knowledge, but it was proved only after several hundred years. This book, based on the author's lectures, presents several new directions of mathematical research. All of these directions are based on numerical experiments conducted by the author, which led to new hypotheses that currently remain open, i.e., are neither proved nor disproved. The hypotheses range from geometry and topology (statistics of plane curves and smooth functions) to combinatorics (combinatorial complexity and random permutations) to algebra and number theory (continuous fractions and Galois groups). For each subject, the author describes the problem and presents numerical results that led him to a particular conjecture. In the majority of cases there is an indication of how the readers can approach the formulated conjectures (at least by conducting more numerical experiments). Written in Arnold's unique style, the book is intended for a wide range of mathematicians, from high school students interested in exploring unusual areas of mathematics on their own, to college and graduate students, to researchers interested in gaining a new, somewhat nontraditional perspective on doing mathematics. In the interest of fostering a greater awareness and appreciation of mathematics and its connections to other disciplines and everyday life, MSRI and the AMS are publishing books in the Mathematical Circles Library series as a service to young people, their parents and teachers, and the mathematics

profession. Titles in this series are co-published with the Mathematical Sciences Research Institute (MSRI). *Heegner Points and Rankin L-Series* Dec 12 2020 The seminal formula of Gross and Zagier relating heights of Heegner points to derivatives of the associated Rankin L-series has led to many generalisations and extensions in a variety of different directions, spawning a fertile area of study that remains active to this day. This volume, based on a workshop on Special Values of Rankin L-series held at the MSRI in December 2001, is a collection of thirteen articles written by many of the leading contributors in the field, having the Gross-Zagier formula and its avatars as a common unifying theme. It serves as a valuable reference for mathematicians wishing to become further acquainted with the theory of complex multiplication, automorphic forms, the Rankin-Selberg method, arithmetic intersection theory, Iwasawa theory, and other topics related to the Gross-Zagier formula. *Current Topics in Complex Algebraic Geometry* Jul 07 2020 The 1992/93 academic year at the Mathematical Sciences Research Institute was devoted to complex algebraic geometry. This volume collects survey articles that arose from this event, which took place at a time when algebraic geometry was undergoing a major change. The editors of the volume, Herbert Clemens and János Kollár, chaired the organizing committee. This book gives a good idea of the intellectual content of the special year and of the workshops. Its articles represent very well the change of direction and branching out witnessed by algebraic geometry in the last few years. A History of Abstract Algebra Sep 08 2020 This textbook provides

an accessible account of the history of abstract algebra, tracing a range of topics in modern algebra and number theory back to their modest presence in the seventeenth and eighteenth centuries, and exploring the impact of ideas on the development of the subject. Beginning with Gauss's theory of numbers and Galois's ideas, the book progresses to Dedekind and Kronecker, Jordan and Klein, Steinitz, Hilbert, and Emmy Noether. Approaching mathematical topics from a historical perspective, the author explores quadratic forms, quadratic reciprocity, Fermat's Last Theorem, cyclotomy, quintic equations, Galois theory, commutative rings, abstract fields, ideal theory, invariant theory, and group theory. Readers will learn what Galois accomplished, how difficult the proofs of his theorems were, and how important Camille Jordan and Felix Klein were in the eventual acceptance of Galois's approach to the solution of equations. The book also describes the relationship between Kummer's ideal numbers and Dedekind's ideals, and discusses why Dedekind felt his solution to the divisor problem was better than Kummer's. Designed for a course in the history of modern algebra, this book is aimed at undergraduate students with an introductory background in algebra but will also appeal to researchers with a general interest in the topic. With exercises at the end of each chapter and appendices providing material difficult to find elsewhere, this book is self-contained and therefore suitable for self-study. Progress in Cryptology - INDOCRYPT 2002 Nov 10 2020 The third successful completion of the INDOCRYPT conference series marks the

acceptance of the series by the international research community as a forum for presenting high-quality research.It also marks the coming of age of cryptology research in India. The authors for the submitted papers were spread across 21 countries and 4 continents, which goes a long way to demonstrate the international interest and visibility of INDOCRYPT.In the previous two conferences, the submissions from India originated from only two institutes; this increased to six for the 2002 conference.Thus INDOCRYPT is well set on the path to achieving two main ob jectives – to provide an international platform for presenting high-quality research and to stimulate cryptology research in India. The opportunity to serve as a program co-chair for the third INDOCRYPT carries a special satisfaction for the second editor.Way back in 1998, the sci- ti?c analysis group of DRDO organized a National Seminar on Cryptology and abbreviated it as NSCR.On attending the seminar, the second editor suggested that the conference name be changed to INDOCRYPT.It is nice to see that this suggestion was taken up, giving us the annual INDOCRYPT conference - ries.Of course, the form, character, and execution of the conference series was the combined e?ort of the entire Indian cryptographic community under the dynamic leadership of Bimal Roy.

Galois Groups and Fundamental Groups Dec 24 2021 Table of contents

Algorithmic Number Theory Apr 15 2021 Self-organized criticality (SOC) has become a magic word in various scientific disciplines; it provides a framework for understanding complexity and scale invariance in systems showing

irregular fluctuations. In the first 10 years after Per Bak and his co-workers presented their seminal idea, more than 2000 papers on this topic appeared. Seismology has been a field in earth sciences where the SOC concept has already deepened the understanding, but there seem to be much more examples in earth sciences where applying the SOC concept may be fruitful. After introducing the reader into the basics of fractals, chaos and SOC, the book presents established and new applications of SOC in earth sciences, namely earthquakes, forest fires, landslides and drainage networks.

Computational Algebraic and Analytic Geometry Jul 19 2021 This volume contains the proceedings of three AMS Special Sessions on Computational Algebraic and Analytic Geometry for Low-Dimensional Varieties held January 8, 2007, in New Orleans, LA; January 6, 2009, in Washington, DC; and January 6, 2011, in New Orleans, LA. Algebraic, analytic, and geometric methods are used to study algebraic curves and Riemann surfaces from a variety of points of view. The object of the study is the same. The methods are different. The fact

that a multitude of methods, stemming from very different mathematical cultures, can be used to study the same objects makes this area both fascinating and challenging. *Dessins d'Enfants on Riemann Surfaces* Sep 01 2022 This volume provides an introduction to dessins d'enfants and embeddings of bipartite graphs in compact Riemann surfaces. The first part of the book presents basic material, guiding the reader through the current field of research. A key point of the second part is the interplay between the automorphism groups of dessins and their Riemann surfaces, and the

action of the absolute Galois group on dessins and their algebraic curves. It concludes by showing the links between the theory of dessins and other areas of arithmetic and geometry, such as the abc conjecture, complex multiplication and Beauville surfaces. Dessins d'Enfants on Riemann Surfaces will appeal to graduate students and all mathematicians interested in maps, hypermaps, Riemann surfaces, geometric group actions, and arithmetic.

Algorithms and Classification in Combinatorial Group Theory Nov 22 2021 The papers in this volume are the result of a workshop held in January 1989 at the Mathematical Sciences Research Institute. Topics covered include decision problems, finitely presented simple groups, combinatorial geometry and homology, and automatic groups and related topics.

The Moduli Space of Curves Mar 27 2022 The moduli space Mg of curves of fixed genus g – that is, the algebraic variety that parametrizes all curves of genus g – is one of the most intriguing objects of study in algebraic geometry these days. Its appeal results not only from its beautiful mathematical structure but also from recent developments in theoretical physics, in particular in conformal field theory.

Several Complex Variables Jul 27 2019 Expository articles on Several Complex Variables and its interactions with PDEs, algebraic geometry, number theory, and differential geometry, first published in 2000.

Galois Covers, Grothendieck-Teichmüller Theory and Dessins d'Enfants Aug 08 2020 This book presents original peer-reviewed contributions from the London Mathematical Society (LMS) Midlands Regional Meeting and Workshop on 'Galois Covers, Grothendieck-

Teichmüller Theory and Dessinsd'Enfants', which took place at the University of Leicester, UK, from 4 to 7 June, 2018. Within the theme of the workshop, the collected articles cover a broad range of topics and explore exciting new links between algebraic geometry, representation theory, group theory, number theory and algebraic topology. The book combines research and overview articles by prominent international researchers and provides a valuable resource for researchers and students alike. **MSRI** Jul 31 2022 *Combinatorial Algebraic Geometry* Sep 28 2019 This volume consolidates selected articles from the 2016 Apprenticeship Program at the Fields Institute, part of the larger program on Combinatorial Algebraic Geometry that ran from July through December of 2016. Written primarily by junior mathematicians, the articles cover a range of topics in combinatorial algebraic geometry including curves, surfaces, Grassmannians, convexity, abelian varieties, and moduli spaces. This book bridges the gap between graduate courses and cutting-edge research by connecting historical sources, computation, explicit examples, and new results. **The Shape of Inner Space** Jun 25 2019 Argues that geometry is fundamental to string theory--which posits that we live in a 10-dimensional existence--as well as the very nature of the universe, and explains where mathematics will take string theory next. **Mathematical Constants II** Jun 05 2020 Famous mathematical constants include the ratio of circular circumference to diameter, $\pi = 3.14$ ..., and the natural logarithm base, $e = 2.718$ .... Students and professionals can often name a few others, but there are many more buried in the literature and awaiting discovery.

How do such constants arise, and why are they important? Here the author renews the search he began in his book Mathematical Constants, adding another 133 essays that broaden the landscape. Topics include the minimality of soap film surfaces, prime numbers, elliptic curves and modular forms, Poisson-Voronoi tessellations, random triangles, Brownian motion, uncertainty inequalities, Prandtl-Blasius flow (from fluid dynamics), Lyapunov exponents, knots and tangles, continued fractions, Galton-Watson trees, electrical capacitance (from potential theory), Zermelo's navigation problem, and the optimal control of a pendulum. Unsolved problems appear virtually everywhere as well. This volume continues an outstanding scholarly attempt to bring together all significant mathematical constants in one place. The Eightfold Way May 17 2021 Expository and research articles by renowned mathematicians on the myriad properties of the Klein quartic. **Wave Motion: Theory, Modelling, and Computation** Nov 30 2019 The 60th birthday of Peter Lax was celebrated at Berkeley by a conference entitled Wave Motion: theory, application and computation held at the mathematical Sciences Research Institute, June 9-12, 1986. Peter Lax has made profound and essential contributions to the topics described by the title of the conference, and has also contributed in important ways to many other mathematical subjects, and as a result this conference volume dedicated to him includes research work on a variety of topics, not all clearly related to its title. **Many Rational Points** Oct 29 2019 This volume provides a source book of examples

with relationships to advanced topics regarding Sato-Tate conjectures, Eichler-Selberg trace formula, Katz-Sarnak conjectures and Hecke operators." "The book will be of use to mathematicians, physicists and engineers interested in the mathematical methods of algebraic geometry as they apply to coding theory and cryptography."-- Jacket. *Geometry, Topology, and Mathematical Physics* Jun 29 2022 The second half of the 20th century and its conclusion : crisis in the physics and mathematics community in Russia and in the West -- Interview with Sergey P. Novikov -- The w-function of the KdV hierarchy -- On the zeta functions of a meromorphic germ in two variables -- On almost duality for Frobenius manifolds -- Finitely presented semigroups in knot theory. Oriented case -- Topological robotics : subspace arrangements and collision free motion planning -- The initial-boundary value problem on the interval for the nonlinear Schrödinger equation. The algebro-geometric approach. I -- On odd Laplace operators. II -- From 2D Toda hierarchy to conformal maps for domains of the Riemann sphere -- Integrable chains on algebraic curves -- Fifteen years of KAM for PDE -- Graded filiform Lie algebras and symplectic nilmanifolds -- Adiabatic limit in the Seiberg-Witten equations -- Affine Krichever-Novikov algebras, their representations and applications -- Tame integrals of motion and o-minimal structures. *Mirzakhani's Curve Counting and Geodesic Currents* Sep 20 2021 This monograph presents an approachable proof of Mirzakhani's curve counting theorem, both for simple and non-simple curves. Designed to welcome readers to the area, the presentation builds intuition with elementary

examples before progressing to rigorous proofs. This approach illuminates new and established results alike, and produces versatile tools for studying the geometry of hyperbolic surfaces, Teichmüller theory, and mapping class groups. Beginning with the preliminaries of curves and arcs on surfaces, the authors go on to present the theory of geodesic currents in detail. Highlights include a treatment of cusped surfaces and surfaces with boundary, along with a comprehensive discussion of the action of the mapping class group on the space of geodesic currents. A user-friendly account of train tracks follows, providing the foundation for radallas, an immersed variation. From here, the authors apply these tools to great effect, offering simplified proofs of existing results and a new, more general proof of Mirzakhani's curve counting theorem. Further applications include counting square-tiled surfaces and mapping class group orbits, and investigating random geometric structures. Mirzakhani's Curve Counting and Geodesic Currents introduces readers to powerful counting techniques for the study of surfaces. Ideal for graduate students and researchers new to the area, the pedagogical approach, conversational style, and illuminating illustrations bring this exciting field to life. Exercises offer opportunities to engage with the material throughout. Basic familiarity with 2-dimensional topology and hyperbolic geometry, measured laminations, and the mapping class group is assumed. *Handbook and Atlas of Curves* Feb 11 2021 The Handbook and Atlas of Curves describes available analytic and visual properties of plane and spatial curves. Information is presented in a

unique format, with one half of the book detailing investigation tools and the other devoted to the Atlas of Plane Curves. Main definitions, formulas, and facts from curve theory (plane and spatial) are disc

Random Curves Apr 27 2022 Neal Koblitz is a co-inventor of one of the two most popular forms of encryption and digital signature, and his autobiographical memoirs are collected in this volume. Besides his own personal career in mathematics and cryptography, Koblitz details his travels to the Soviet Union, Latin America, Vietnam and elsewhere;

political activism; and academic controversies relating to math education, the C. P. Snow "two-culture" problem, and mistreatment of women in academia. These engaging stories fully capture the experiences of a student and later a scientist caught up in the tumultuous events of his generation.

Group Theory From A Geometrical Viewpoint Jan 01 2020 This proceedings presents the latest research materials done on group theory from geometrical viewpoint in particular Gromov's theory of hyperbolic groups, Coxeter groups, Tits buildings and

actions on real trees. All these are very active subjects.

Three-Dimensional Geometry and Topology, Volume 1 Aug 27 2019 This book develops some of the extraordinary richness, beauty, and power of geometry in two and three dimensions, and the strong connection of geometry with topology. Hyperbolic geometry is the star. A strong effort has been made to convey not just denatured formal reasoning (definitions, theorems, and proofs), but a living feeling for the subject. There are many figures, examples, and exercises of varying

difficulty. This book was the origin of a grand scheme developed by Thurston that is now coming to fruition. In the 1920s and 1930s the mathematics of two-dimensional spaces was formalized. It was Thurston's goal to do the same for three-dimensional spaces. To do this, he had to establish the strong connection of geometry to topology--the study of qualitative questions about geometrical structures. The author created a new set of concepts, and the expression "Thurston-type geometry" has become a commonplace. Three-Dimensional Geometry and Topology had its origins in the form of notes for a graduate course the author taught at Princeton University between 1978 and 1980. Thurston shared his notes, duplicating and sending them to whoever requested them. Eventually, the mailing list grew to more than one thousand names. The book is the culmination of two decades of research and has become the most important and influential text in the field. Its content also provided the methods needed to solve one of mathematics' oldest unsolved problems-- the Poincaré Conjecture. In 2005 Thurston won the first AMS Book Prize, for Three-dimensional Geometry and Topology. The prize recognizes an outstanding research book that makes a seminal contribution to the research literature. Thurston received the Fields Medal, the mathematical equivalent of the Nobel Prize, in 1982 for the depth and originality of his contributions to mathematics. In 1979 he was awarded the Alan T. Waterman Award, which recognizes an outstanding young researcher in any field of science or engineering supported by the National Science Foundation. **Progress in Galois Theory** Jan 25 2022 The legacy of Galois was the beginning

of Galois theory as well as group theory. From this common origin, the development of group theory took its own course, which led to great advances in the latter half of the 20th cen tury. It was John Thompson who shaped finite group theory like no-one else, leading the way towards a major milestone of 20th century mathematics, the classification of finite simple groups. After the classification was announced around 1980, it was again J. Thomp son who led the way in exploring its implications for Galois theory. The first question is whether all simple groups occur as Galois groups over the rationals (and related fields), and secondly, how can this be used to show that all finite groups occur (the 'Inverse Problem of Galois Theory'). What are the implica tions for the stmcture and representations of the absolute Galois group of the rationals (and other fields)? Various other applications to algebra and number theory have been found, most prominently, to the theory of algebraic curves (e.g., the Guralnick-Thompson Conjecture on the Galois theory of covers of the Riemann sphere). <u>Birational Geometry and Moduli Spaces</u> Jun 17 2021 This volume collects contributions from speakers at the INdAM Workshop "Birational Geometry and Moduli Spaces", which was held in Rome on 11–15 June 2018. The workshop was devoted to the interplay between birational geometry and moduli spaces and the contributions of the volume reflect the same idea, focusing on both these areas and their interaction. In particular, the book includes both surveys and original papers on irreducible holomorphic symplectic manifolds, Severi varieties, degenerations of Calabi-Yau varieties, uniruled threefolds, toric Fano threefolds,

mirror symmetry, canonical bundle formula, the Lefschetz principle, birational transformations, and deformations of diagrams of algebras. The intention is to disseminate the knowledge of advanced results and key techniques used to solve open problems. The book is intended for all advanced graduate students and researchers interested in the new research frontiers of birational geometry and moduli spaces.