

賀正
**Yurinsha
Book News**

CRM Monographs Series,

Vol. 30: Silverman, J.:

463-094

**Moduli Spaces and
Arithmetic Dynamics**

This monograph studies moduli problems associated to algebraic dynamical systems. It is an expanded version of the notes for a series of lectures delivered at a workshop on Moduli Spaces and the Arithmetic of Dynamical Systems at the Bellairs Research Institute, Barbados, in 2010.

The author's goal is to provide an overview, with enough details and pointers to the existing literature, to give the reader an entry into this exciting area of current research.

Topics covered include:

- (1) Construction and properties of dynamical moduli spaces for self-maps of projective space. (2) Dynamical modular curves for the space of quadratic polynomials. (3) The theory of canonical heights associated to dynamical systems. (4) Special loci in dynamical moduli spaces, in particular the locus of post-critically finite maps. (5) Field of moduli and fields of definition for dynamical systems.

Table of Contents: *Moduli spaces associated to dynamical systems

*The geometry of dynamical moduli spaces *Dynamical moduli spaces-Further topics *Dynamical polynomials and dynamical modular curves *Canonical heights *Postcritically finite maps *Field of moduli and field of definition *Schedule of talks at the Bellairs workshop *Glossary *Bibliography *Index

Mar. 2012

140 pp.

9780821875827

6,960.

A. M. S.

<http://www.yurinsha.com>

ホームページは毎月25日更新予定です

No. 463

Jan. 2012

敬理科学 友隣社 洋書専門

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(株) 友 隣 社

*Mathematical Surveys and Monographs,***Vol. 180: Liebeck, M. /Seitz, G.:** 463-081**Unipotent and Nilpotent Classes in
Simple Algebraic Groups and Lie Algebras**

This book concerns the theory of unipotent elements in simple algebraic groups over algebraically closed or finite fields, and nilpotent elements in the corresponding simple Lie algebras.

These topics have been an important area of study for decades, with applications to representation theory, character theory, the subgroup structure of algebraic groups and finite groups, and the classification of the finite simple groups.

The main focus is on obtaining full information on class representatives and centralizers of unipotent and nilpotent elements.

Although there is a substantial literature on this topic, this book is the first single source where such information is presented completely in all characteristics.

In addition, many of the results are new—for example, those concerning centralizers of nilpotent elements in small characteristics.

Feb. 2012

380 pp.

9780821869208

11,140.

*Graduate Studies in Mathematics,***Vol. 132: Tao, T.:** 463-099**Topics in Random Matrix Theory**

The field of random matrix theory has seen an explosion of activity in recent years, with connections to many areas of mathematics and physics. However, this makes the current state of the field almost too large to survey in a single book.

In this graduate text, we focus on one specific sector of the field, namely the spectral distribution of random Wigner matrix ensembles (such as the Gaussian Unitary Ensemble), as well as iid matrix ensembles.

The text is largely self-contained and starts with a review of relevant aspects of probability theory and linear algebra.

With over 200 exercises, the book is suitable as an introductory text for beginning graduate students seeking to enter the field.

Apr. 2012

291 pp.

9780821874301

7,420.

Vol. 131: Musson, I.: 463-084**Lie Superalgebras and Enveloping Algebras**

The book begins with five chapters on the basic properties of Lie superalgebras, including explicit constructions for all the classical simple Lie superalgebras. Borel subalgebras, which are more subtle in this setting, are studied and described.

Contragredient Lie superalgebras are introduced, allowing a unified approach to several results, in particular to the existence of an invariant bilinear form on \mathfrak{g} .

The enveloping algebra of a finite dimensional Lie superalgebra is studied as an extension of the enveloping algebra of the even part of the superalgebra.

By developing general methods for studying such extensions, important information on the algebraic structure is obtained, particularly with regard to primitive ideals. Fundamental results, such as the Poincare-Birkhoff-Witt Theorem, are established.

Apr. 2012

500 pp.

9780821868676

10,090.

A. M. S.

Progress in Mathematics,

Vol. 298: Getz, J. /Goresky, M.: 463-058
**Hilbert Modular Forms with Coefficients in
 Intersection Homology and
 Quadratic Base Change**

In the 1970s Hirzebruch and Zagier produced elliptic modular forms with coefficients in the homology of a Hilbert modular surface. They then computed the Fourier coefficients of these forms in terms of period integrals and L-functions.

In this book the authors take an alternate approach to these theorems and generalize them to the setting of Hilbert modular varieties of arbitrary dimension. The approach is conceptual and uses tools that were not available to Hirzebruch and Zagier, including intersection homology theory, properties of modular cycles, and base change.

Automorphic vector bundles, Hecke operators and Fourier coefficients of modular forms are presented both in the classical and adelic settings. The book should provide a foundation for approaching similar questions for other locally symmetric spaces.

Mar. 2012 240 pp.
 9783034803502 12,790.

Pseudo-Differential Operators

Cohen, L.: 463-121
The Weyl Operator and Its Generalization

The discovery of quantum mechanics in the years 1925-1930 necessitated the consideration of associating ordinary functions with non-commuting operators. Methods were proposed by Born/Jordan, Kirkwood, and Weyl. Sometime later, Moyal saw the connection between the Weyl rule and the Wigner distribution, which had been proposed by Wigner in 1932 as a way of doing quantum statistical mechanics.

The basic idea of associating functions with operators has since been generalized and developed to a high degree.

It has found several application fields, including quantum mechanics, pseudo-differential operators, time-frequency analysis, quantum optics, wave propagation, differential equations, image processing, radar, and sonar. This book aims at bringing together the results from the above mentioned fields in a unified manner and showing the reader how the methods have been applied.

Aug. 2012 250 pp.
 9783034802932 10,390.

Operator theory: Advances and Applications,

*Vol. 220: Ball, J. /Curto, R. /Grudsky, S. /Helton, J. /
 Quiroga-Barranco, R. /Vasilevski, N. (eds.):* 463-111
**Recent Progress in Operator Theory
 and Its Applications**

Consistent with the topics of recent IWOTA meetings, IWOTA 2009 was designed as a comprehensive, inclusive conference covering all aspects of theoretical and applied operator theory, ranging from classical analysis, differential and integral equations, complex and harmonic analysis to mathematical physics, mathematical systems and control theory, signal processing and numerical analysis.

Mar. 2012 350 pp.
 9783034803458 17,590.

Birkhauser

London Mathematical Society Lecture Note Series,

Vol. ***: Zhang, C.-Q.:

463-104

Circuit Double Cover of Graphs

The famous Circuit Double Cover conjecture (and its numerous variants) is considered one of the major open problems in graph theory owing to its close relationship with topological graph theory, integer flow theory, graph coloring and the structure of snarks.

It is easy to state: every 2-connected graph has a family of circuits covering every edge precisely twice.

C.-Q. Zhang provides an up-to-date overview of the subject containing all of the techniques, methods and results developed to help solve the conjecture since the first publication of the subject in the 1940s.

It is a useful survey for researchers already working on the problem and a fitting introduction for those just entering the field.

The end-of-chapter exercises have been designed to challenge readers at every level and hints are provided in an appendix.

Apr. 2012

375 pp.

9780521282352

7,350.

Cambridge Studies in Advanced Mathematics,

Vol. ***: Li, P.:

463-124

Geometric Analysis

The aim of this graduate-level text is to equip the reader with the basic tools and techniques needed for research in various areas of geometric analysis.

Throughout, the main theme is to present the interaction of partial differential equations and differential geometry.

More specifically, emphasis is placed on how the behavior of the solutions of a PDE is affected by the geometry of the underlying manifold and vice versa. For efficiency the author mainly restricts himself to the linear theory and only a rudimentary background in Riemannian geometry and partial differential equations is assumed.

May 2012

285 pp.

9781107020641

8,770.

Encyclopedia of Mathematics and its Applications,

Vol. ***: Dassios, G.:

463-124

Ellipsoidal Harmonics

The sphere is what might be called a perfect shape.

Unfortunately nature is imperfect and many bodies are better represented by an ellipsoid.

The theory of ellipsoidal harmonics, originated in the nineteenth century, could only be seriously applied with the kind of computational power available in recent years.

This, therefore, is the first book devoted to ellipsoidal harmonics.

Topics are drawn from geometry, physics, biosciences and inverse problems.

It contains classical results as well as new material, including ellipsoidal

bi-harmonic functions, the theory of images in ellipsoidal geometry

and vector surface ellipsoidal harmonics, which exhibit an interesting

analytical structure. Extended appendices provide everything

one needs to solve formally boundary value problems.

End-of-chapter problems complement the theory and test

the reader's understanding.

June 2012

390 pp.

9780521113090

价格未定

Cambridge

Surveys in Differential Geometry,

Vol. 16: Leung, N. /Yau, S.-T. (eds.): 463-183
Surveys in Differential Geometry, Vol. 2011:
Geometry of special holonomy and related topics

The editors of the highly esteemed Journal of Differential Geometry (published by International Press) each year present a new volume of Surveys in Differential Geometry, a collection of original contributions upon a specially chosen topic pertaining to differential geometry and related topics.

The series presents an overview of recent trends, while making predictions and suggestions for future research.

Each invited contributor is a prominent specialist in the field of algebraic geometry, mathematical physics, or related areas.

Contributors to Surveys tend to transcend classical frameworks within their field. Table of Contents Gauge theory in higher dimensions, II (Simon Donaldson and Ed Segal) An invitation to toric degenerations (Mark Gross and Bernd Siebert) Lectures on generalized geometry (Nigel Hitchin) Generalized Donaldson-Thomas invariants (Dominic Joyce) Geometric structures on Riemannian manifolds (Naichung Conan Leung) Sasaki-Einstein manifolds (James Sparks) A survey of geometric structure in geometric analysis (Shing-Tung Yau)

Jan. 2012 347 pp. 10,030.
 9781571462114

Advanced Lectures in Mathematics,

Vol. 20: Bray, H. /Minicozzi II, W. (eds.): 463-042
Surveys in Geometric Analysis Relativity

This volume presents twenty-three selected survey articles on central topics of geometric analysis and general relativity, written by prominent experts in the fields.

Topics of geometric analysis include: the Yamabe problem, mean curvature flow, minimal surfaces, harmonic maps, Ricci flow, gluing and desingularization constructions, function theory, collapsing of manifolds, Kahler-Einstein metrics, asymptotic geometry of complete manifolds, and the geometry of Teichmuller spaces.

General relativity topics include: the positive mass theorem, the Penrose inequality, scalar curvature and Einstein's constraint equations, quasi-local mass functionals, the topology of higher dimensional black holes, and the positive mass theorem for asymptotically hyperbolic manifolds.

This volume is dedicated to Richard Schoen - in honor of his contributions to both geometric analysis and general relativity.

Jan. 2012 546 pp. 10,030.
 9781571462305

Vol. 19: Cogdell, J. /Funke, J. /Rapoport, M. /Yang, T. (eds.):
Arithmetic Geometry and Automorphic Forms

Throughout his career, Stephen Kudla has done significant work in the fields of representation theory, automorphic forms, number theory, and arithmetic geometry.

In this Festschrift volume celebrating Kudla's sixtieth birthday, we present papers from many of the students, collaborators, and colleagues that were influenced by him.

The papers in this volume, taken together, give the reader a sense of the current state of the several fields to which Kudla has contributed over the years, and suggest new avenues of future exploration.

Jan. 2012 557 pp. 10,030.
 9781571462299

International Press

*Lecture Notes in Mathematics***Vol. 2048: Alabau-Boussouira, F. /Brockett, R. / 463-105****Ervedoza, S. /Glass, O. /Le Rousseau, J. /Zuazua, E.:****Control of Partial Differential Equations:****C.I.M.E. Summer School, Cetraro, Italy 2010**Editors:**Piermarco Cannarsa, Jean-Michel Coron**

This monograph is concerned with models that can be described by partial differential equations of evolution. It contains five major contributions and is connected to the CIME Course on Control of Partial Differential Equations that took place in Cetraro (CS, Italy), July 19 - 23, 2010. Specifically, it covers the stabilization of evolution equations, control of the Liouville equation, control in fluid mechanics, control and numerics for the wave equation, and Carleman estimates for elliptic and parabolic equations with application to control.

We are confident this work will provide an authoritative reference work for all scientists who are interested in this field, representing at the same time a friendly introduction to, and an updated account of, some of the most active trends in current research.

Mar. 2012

332 pp.

9783642278921

11,190.

Vol. 2047: Stamov, G.:

463-161

**Almost Periodic Solutions of
Impulsive Differential Equations**

Impulsive differential equations are suitable for the mathematical simulation of evolutionary processes in which the parameters undergo relatively long periods of smooth variation followed by short-term rapid changes (that is, jumps) in their values. Processes of this type are often investigated in various fields of science and technology.

The question of the existence and uniqueness of almost periodic solutions of differential equations is an age-old problem of great importance.

The qualitative theory of impulsive differential equations is currently undergoing rapid development in relation to the investigation of various processes which are subject to impacts during their evolution, and many findings on the existence and uniqueness of almost periodic solutions of these equations are being made.

This book systematically presents findings related to almost periodic solutions of impulsive differential equations and illustrates their potential applications.

Feb. 2012

204 pp.

9783642275456

7,190.

Vol. 2046: Donati-Martin, C. /Lejay, A. /Rouault, A. (eds.):**Seminaire de Probabilites XLIV**

As usual, some of the contributions to this 44th Seminaire de Probabilites were presented during the Journées de Probabilites held in Dijon in June 2010. The remainder were spontaneous submissions or were solicited by the editors. The traditional and historical themes of the Seminaire are covered, such as stochastic calculus, local times and excursions, and martingales.

Some subjects already touched on in the previous volumes are still here: free probability, rough paths, limit theorems for general processes (here fractional Brownian motion and polymers), and large deviations.

Lastly, this volume explores new topics, including variable length Markov chains and peacocks.

Mar. 2012

436 pp.

9783642274602

11,190.

Springer

interesting viewed and read together.

新刊特集

Kostant, B. /Joseph, A. /Vergne, M. /Kumar, S.:
Collected Papers of Bertram Kostant:
Volume IV 1985-1995

For more than five decades Bertram Kostant has been one of the major architects of modern Lie theory. 463-077/078

Virtually all his papers are pioneering with deep consequences, many giving rise to whole new fields of activities.

His interests span a tremendous range of Lie theory, from differential geometry to representation theory, abstract algebra, & mathematical physics. Some specific topics cover algebraic groups and invariant theory, the geometry of homogeneous spaces, representation theory, geometric quantization and symplectic geometry, Lie algebra cohomology, Hamiltonian mechanics, modular forms, Whittaker theory, Toda lattice, and much more.

It is striking to note that Lie theory (and symmetry in general) now occupies an ever increasing larger role in mathematics than it did in the fifties.

Sep. 2013 645 pp. 12,200.
9780387095882

Kostant, B. /Joseph, A. /Vergne, M. /Kumar, S.:
Collected Papers of Bertram Kostant:
Volume V 1995-2005

Sep. 2013 645 pp. 12,200.
9780387095905

New Series: Springer INdAM Series

Sabadini, I. /Struppa, D. /Gentili, G. /Shapiro, M.(eds.):
Advances in Hypercomplex Analysis

This volume is intended to collect important research results to the lectures and discussions which took place in Rome, at the INdAM Workshop on Different Notions of Regularity for Functions of Quaternionic Variables, 2010.

This volume will collect recent and new results, which are connected to the topic covered during the workshop.

The work aims at bringing together international leading specialists in the field of Quaternionic and Clifford Analysis, as well as young researchers interested in the subject, with the idea of presenting and discussing recent results, analyzing new trends and techniques in the area and, in general, of promoting scientific collaboration.

June 2012 240 pp. 463-157
9788847024441 12,790.

Springer Undergraduate Mathematics

Norman, C.: 463-088
Finitely Generated Abelian Groups and
Similarity of Matrices over a Field

At first sight, finitely generated abelian groups & canonical forms of matrices appear to have little in common. However, reduction to Smith normal form, named after its originator H.J.S. Smith in 1861, is a matrix version of the Euclidean algorithm and is exactly what the theory requires in both cases. Starting with matrices over the integers, Part 1 of this book provides a measured introduction to the decomposition of such groups: two finitely generated abelian groups are isomorphic if and only if their invariant factor sequences are identical.

Mar. 2012 356 pp. 6,390.
9781447127291

Springer

Liao, S.:

463-144

**Homotopy Analysis Method in
Nonlinear Differential Equations**

This book presents the latest developments and applications of the analytic approximation method for highly nonlinear problems, namely the homotopy analysis method (HAM).

This book consists of three parts. Part I provides its basic ideas and theoretical development. Part II presents the HAM-based Mathematica package BVP4 1.0 for nonlinear boundary-value problems and its applications. Part III shows the validity of the HAM for nonlinear PDEs, such as the American put option and resonance criterion of nonlinear travelling waves. New solutions to a number of nonlinear problems are presented, illustrating the originality of the HAM.

Jan. 2012

400 pp.

9783642251313

14,390.

Cheng, X. /Shen, Z.:

463-170

**Finsler Geometry:
An Approach Via Randers Spaces**

"Finsler Geometry: An Approach via Randers Spaces" exclusively deals with a special class of Finsler metrics -- Randers metrics, which are defined as the sum of a Riemannian metric and a 1-form.

Randers metrics derive from the research on General Relativity Theory and have been applied in many areas of the natural sciences. They can also be naturally deduced as the solution of the Zermelo navigation problem. The book provides readers not only with essential findings on Randers metrics but also the core ideas and methods which are useful in Finsler geometry.

Mar. 2012

200 pp.

9783642248870

12,790.

Use R

Beyersmann, A. /Allignol, A. /Schumacher, M.:

463-200

Competing Risks and Multistate Models with R

This book explains hazard-based analyses of competing risks and multistate data with R.

Special emphasis is placed on the interpretation of the results.

A unique feature of this book is that readers are encouraged to simulate their own data based on the transition hazards only, which are the key quantities of the subsequent analyses.

Nov. 2011

245 pp.

9781461420347

7,990.

*Lecture Notes in Statistics,***Vol. 205: Barbour, A. /Chan, H.-P. /Siegmund, D. (eds.):
Probability Approximations and Beyond**

The papers in this volume attest to how Louis Chen's ideas have influenced and continue to influence such diverse areas as

463-198

molecular biology and computer science. He himself has developed applications of his work on Poisson approximation to problems of signal detection in computational biology.

The original papers contained in this book provide historical context for Louis's work, alongside commentary on some of his major contributions by noteworthy statisticians and mathematicians working today.

Jan. 2012

157 pp.

9781461419655

11,190.

Springer

Grimaldi, R.:

Fibonacci and Catalan Numbers

In this one-of-a-kind book, Ralph Grimaldi uses his extensive experience from the classroom and as a leader of mini-courses to present an accessible, single resource on the topics of Fibonacci Numbers and Catalan Numbers. The book first embarks on a complete treatment of Fibonacci numbers. Starting with a historical background on the topic, the author goes on to present the properties of Fibonacci numbers, a slew of introductory-level examples, and in-depth discussion of related topics including compositions and palindromes; tiling and Fibonacci numbers; solving linear recurrence relations; graph theory; Lucas numbers; and alternate Fibonacci numbers. The second half of the book explores Catalan numbers, and the author builds a complete foundation to the topic using a historical background and introductory examples, along with coverage of partial orders, total orders, topological sorting, graph theory, rooted ordered binary trees, pattern avoidance, and the Narayana numbers.

Feb. 2012 384 pp. 11,590.
9780470631577

Tucker, A.:

Applied Combinatorics, 6th ed.

The new 6th edition of Applied Combinatorics builds on the previous editions with more in depth analysis of computer systems in order to help develop proficiency in basic discrete math problem solving. As one of the most widely used book in combinatorial problems, this edition explains how to reason and model combinatorially while stressing the systematic analysis of different possibilities, exploration of the logical structure of a problem, and ingenuity. Although important uses of combinatorics in computer science, operations research, and finite probability are mentioned, these applications are often used solely for motivation.

Feb. 2012 496 pp. 17,970.
9780470458389

Greenberg, M.:

Ordinary Differential Equations

After a brief review of first-order differential equations, this book focuses on second-order equations with constant coefficients that derive their general solution using only results described previously. Higher-order equations are provided since the patterns are more readily grasped by students. Stability and fourth order equations are also discussed since these topics typically appear in further study for engineering and science majors.

Feb. 2012 544 pp. 13,340.
9781118230022

Nicholson, K.:

Introduction to Abstract Algebra, 4th ed.

This book is intended for a one or two semester abstract algebra course. The writing style is appealing to students, and great effort has been made to motivate and be very clear about how the topics and applications relate to one another. Many applications (particularly to coding theory, cryptography, and to combinatorics) are provided to illustrate how the abstract structures relate to real-world problems.

Feb. 2012 560 pp. 15,080.
9781118135358

Wiley

Hida Haruzo :

463-068

**Geometric Modular Forms and
Elliptic Curves, 2nd ed.**

This book provides a comprehensive account of the theory of moduli spaces of elliptic curves (over integer rings) and its application to modular forms.

The construction of Galois representations, which play a fundamental role in Wiles' proof of the Shimura - Taniyama conjecture, is given.

In addition, the book presents an outline of the proof of diverse modularity results of two-dimensional Galois representations (including that of Wiles), as well as some of the author's new results in that direction.

In this new second edition, a detailed description of Barsotti - Tate groups (including formal Lie groups) is added to Chapter 1.

As an application, a down-to-earth description of formal deformation theory of elliptic curves is incorporated at the end of Chapter 2 (in order to make the proof of regularity of the moduli of elliptic curve more conceptual), and in Chapter 4, though limited to ordinary cases, newly incorporated are Ribet's theorem of full image of modular p-adic Galois representation and its generalization to 'big' lambda-adic Galois representations under mild assumptions (a new result of the author).

Jan. 2012

468 pp.

9789814368643

13,920.

*ICP Advanced Texts in Mathematics,**Vol. 5: Hernandez-Lerma, O. /Prieto-Rumeau, T.:*

Selected Topics on

463-205

**Continuous-Time Controlled
Markov Chains and Markov Games**

The former, which are also known as continuous-time Markov decision processes, form a class of stochastic control problems in which a single decision-maker has a wish to optimize a given objective function.

In contrast, there are two or more decision-makers (or players, or controllers) trying to optimize its own objective function in a Markov game.

Both decision-making processes appear in a large number of applications in economics, operations research, engineering, and computer science - among other areas.

The main features of the control and game models studied in the book are the continuous time variable, the denumerable state space, and that the control (or action) sets are Borel spaces.

Apr. 2012

300 pp.

9781848168480

11,370.

Series on Knots and Everything,

Kauffman, L.:

463-178

Knots and Physics, 4th ed.

This invaluable book is an introduction to knot and link invariants as generalized amplitudes for a quasi-physical process.

The demands of knot theory, coupled with a quantum-statistical framework, create a context that naturally and powerfully includes an extraordinary range of interrelated topics in topology and mathematical physics.

The author takes a primarily combinatorial stance toward knot theory and its relations with these subjects.

This stance has the advantage of providing direct access to the algebra and to the combinatorial topology, as well as physical ideas.

Dec. 2012

800 pp.

9789814383004/9789814383011

22,620./12,530. (Paper ed.)

World Scientific Pub.

Annals of Mathematics Studies,

*Vol. ***: Green, M. /Griffiths, P. /Kerr, M.:* 463-062/063

**Mumford-Tate Groups and Domains:
Their Geometry and Arithmetic**

This book is the first comprehensive exploration of Mumford-Tate groups and domains. Containing basic theory and a wealth of new views and results, it will become an essential resource for graduate students and researchers. Although Mumford-Tate groups can be defined for general structures, their theory and use to date has mainly been in the classical case of abelian varieties. While the book does examine this area, it focuses on the nonclassical case. The general theory turns out to be very rich, such as in the unexpected connections of finite dimensional and infinite dimensional representation theory of real, semisimple Lie groups. The authors give the complete classification of Hodge representations, a topic that should become a standard in the finite-dimensional representation theory of noncompact, real, semisimple Lie groups.

Apr. 2012 288 pp.
9780691154244/9780691154251 14,320./6,510. (Paper ed.)

*Vol. ***: Katz, N.:* 463-073/074

Convolution and Equidistribution:

Sato-Tate Theorems for Finite-Field Mellin Transforms

Convolution and Equidistribution explores an important aspect of number theory--the theory of exponential sums over finite fields and their Mellin transforms--from a new, categorical point of view. The book presents fundamentally important results and a plethora of examples, opening up new directions in the subject. The finite-field Mellin transform (of a function on the multiplicative group of a finite field) is defined by summing that function against variable multiplicative characters.

The basic question considered in the book is how the values of the Mellin transform are distributed (in a probabilistic sense), in cases where the input function is suitably algebro-geometric. This question is answered by the book's main theorem, using a mixture of geometric, categorical, and group-theoretic methods.

Mar. 2012 212 pp.
9780691153308/9780691153315 14,090./6,410. (Paper ed.)

*Vol. ***: Zannier, U.:* With appendixes by David Masser:

**Some Problems of Unlikely Intersections in
Arithmetic and Geometry** 463-102/103

The book is an expansion of the Hermann Weyl Lectures delivered by Umberto Zannier at the Institute for Advanced Study in Princeton, 2010.

The book consists of four chapters and seven brief appendixes, the last six by David Masser.

The first chapter considers multiplicative algebraic groups, presenting proofs of several developments, ranging from the origins to recent results, and discussing many applications and relations with other contexts. The second chapter considers an analogue in arithmetic and several applications of this. The third chapter introduces a new method for approaching some of these questions, and presents a detailed application of this to a relative case of the Manin-Mumford issue. The fourth chapter focuses on the Andre-Oort conjecture.

Apr. 2012 160 pp.
9780691153704/9780691153711 14,090./6,410. (Paper ed.)

Princeton University

*Annals of Mathematics Studies,***Vol. ***: Lindenstrauss, J. /Preiss, D. /Tiser, J.:
Frechet Differentiability of Lipschitz Functions and
Porous Sets in Banach Spaces**

This book makes a significant inroad into the unexpectedly difficult question of existence of Frechet derivatives of Lipschitz maps of Banach spaces into higher dimensional spaces.

Because the question turns out to be closely related to porous sets in Banach spaces, it provides a bridge between descriptive set theory and the classical topic of existence of derivatives of vector-valued Lipschitz functions.

The topic is relevant to classical analysis and descriptive set theory on Banach spaces.

The book opens several new research directions in this area of 463-146/147 geometric nonlinear functional analysis.

The new methods developed here include a game approach to perturbational variational principles that is of independent interest.

Detailed explanation of the underlying ideas and motivation behind the proofs of the new results on Frechet differentiability of vector-valued functions should make these arguments accessible to a wider audience.

The most important special case of the differentiability results, that Lipschitz mappings from a Hilbert space into the plane have points of Frechet differentiability, is given its own chapter with a proof that is independent of much of the work done to prove more general results.

The book raises several open questions concerning its two main topics.

Mar. 2012

424 pp.

9780691153551/9780691153568

14,090./6,410. (Paper ed.)

Vol. *: Alexakis, S.: 463-166/167****The Decomposition of
Global Conformal Invariants**

This book addresses a basic question in differential geometry that was first considered by physicists Stanley Deser and Adam Schwimmer in 1993 in their study of conformal anomalies.

The question concerns conformally invariant functionals on the space of Riemannian metrics over a given manifold.

These functionals act on a metric by first constructing a Riemannian scalar out of it, and then integrating this scalar over the manifold.

Suppose this integral remains invariant under conformal re-scalings of the underlying metric.

What information can one then deduce about the Riemannian scalar?

Deser and Schwimmer asserted that the Riemannian scalar must be a linear combination of three obvious candidates, each of which clearly satisfies the required property: a local conformal invariant, a divergence of a Riemannian vector field, and the Chern-Gauss-Bonnet integrand.

This book provides a proof of this conjecture.

The result itself sheds light on the algebraic structure of conformal anomalies, which appear in many settings in theoretical physics.

It also clarifies the geometric significance of the renormalized volume of asymptotically hyperbolic Einstein manifolds.

The methods introduced here make an interesting connection between algebraic properties of local invariants—such as the classical Riemannian invariants and the more recently studied conformal invariants—and the study of global invariants, in this case conformally invariant integrals.

Apr. 2012

568 pp.

9780691153476/9780691153483

14,090./6,410. (Paper ed.)

Princeton University

New Series: *The QGM Master Class Series*

Penner, R.:

463-153

Decorated Teichmuller Theory

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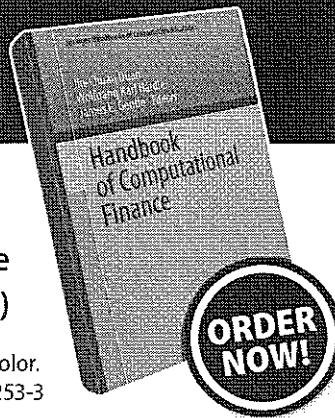
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