Yurinsha Book News

Cambridge Tracts in Mathematics,

Vol. 196: **Ivic, A.:** 467-091

The Theory of Hardy's Z-Function

Hardy's Z-function, related to the Riemann zeta-function ζ (s), was originally utilised by G. H. Hardy to show that ζ (s) has infinitely many zeros of the form $^1/_2$+it.
It is now amongst the most important functions of analytic number theory, and the Riemann hypothesis, that all complex zeros lie on the line $^1/_2$+it, is perhaps one of the best known and most important open problems in mathematics.
Today Hardy's function has many applications; among others it is used for extensive calculations regarding the zeros of ζ (s).
This comprehensive account covers many aspects of Z(t), including the distribution of its zeros, Gram points, moments and Mellin transforms.

Nov. 2012 **250 pp.**
9781107028838 **9,040.**

Vol. 197: **Kaniuth, E. /Taylor, K.:** 詳細掲載 Page 48
Induced Representations of Locally Compact Groups
Nov. 2012 *200 pp.* *9780521762267* *7,340.*

Vol. 194: **Kuksin, S.:**
Mathematics of Two-Dimensional Turbulence
Oct. 2012 *340 pp.* *9781107022829* *9,610.*

*Vol. ***:* **Chiswell, I. /Muller, T.:**
A Universal Construction for Groups Acting Freely on Real Trees
Nov. 2012 *300 pp.* *9781107024816* *9,610.*

Cambridge

http://www.yurinsha.com
ホームページは毎月25日更新予定です

No. 467 May 2012
数理科学 友隣社 洋書専門

Graduate Studies in Mathematics,

Vol. 138: **Zworski, M.:**
Semiclassical Analysis 467-173

Semiclassical analysis provides PDE techniques based on the classical-quantum (particle-wave) correspondence. These techniques include such well-known tools as geometric optics and the Wentzel-Kramers-Brillouin approximation. Examples of problems studied in this subject are high energy eigenvalue asymptotics and effective dynamics for solutions of evolution equations. From the mathematical point of view, semiclassical analysis is a branch of microlocal analysis which, broadly speaking, applies harmonic analysis and symplectic geometry to the study of linear and nonlinear PDE. The book is intended to be a graduate level text introducing readers to semiclassical and microlocal methods in PDE.

Aug. 2012 424 pp.
9780821883204 9,370.

Vol. 137: **Barreira, L. /Valls, C.:** 467-115
Ordinary Differential Equations: Qualitative Theory

This textbook provides a comprehensive introduction to the qualitative theory of ordinary differential equations. It includes a discussion of the existence and uniqueness of solutions, phase portraits, linear equations, stability theory, hyperbolicity and equations in the plane. The emphasis is primarily on results and methods that allow one to analyze qualitative properties of the solutions without solving the equations explicitly. The text includes numerous examples that illustrate in detail the new concepts and results as well as exercises at the end of each chapter. The book is also intended to serve as a bridge to important topics that are often left out of a course on ordinary differential equations. In particular, it provides brief introductions to bifurcation theory, center manifolds, normal forms and Hamiltonian systems.

July 2012 248 pp.
9780821887493 8,000.

Vol. 136: **Petrosyan, A. /Shahgholian, H. /Uraltseva, N.:**
Regularity of Free Boundaries in Obstacle-Type Problems 467-157

The regularity theory of free boundaries flourished during the late 1970s and early 1980s and had a major impact in several areas of mathematics, mathematical physics, and industrial mathematics, as well as in applications. Since then the theory continued to evolve. Numerous new ideas, techniques, and methods have been developed, and challenging new problems in applications have arisen. The main intention of the authors of this book is to give a coherent introduction to the study of the regularity properties of free boundaries for a particular type of problems, known as obstacle-type problems. The emphasis is on the methods developed in the past two decades. The topics include optimal regularity, nondegeneracy, rescalings and blowups, classification of global solutions, several types of monotonicity formulas, Lipschitz, C^1, as well as higher regularity of the free boundary, structure of the singular set, touch of the free and fixed boundaries, and more.

Aug. 2012 225 pp.
9780821887943 6,750.

A. M. S.

Contemporary Mathematics,

Vol. 572: Seppala, M. /Volcheck, E. (eds.): 467-102
Computational Algebraic and Analytic Geometry

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.

July 2012 234 pp.
9780821868690 10,750.

Vol. 570: Perez, J. /Galvez, J. (eds.): 467-156
Geometric Analysis: Partial Differential Equations and Surfaces

This volume contains research and expository articles from the courses and talks given at the RSME Lluis A. Santalo Summer School, "Geometric Analysis", held June 28-July 2, 2010, in Granada, Spain.
The goal of the Summer School was to present some of the many advances currently taking place in the interaction between partial differential equations and differential geometry, with special emphasis on the theory of minimal surfaces.
This volume includes expository articles about the current state of specific problems involving curvature and partial differential equations, with interactions to neighboring fields such as probability.
An introductory, mostly self-contained course on constant mean curvature surfaces in Lie groups equipped with a left invariant metric is provided.
The volume will be of interest to researchers, post-docs, and advanced PhD students in the interface between partial differential equations and differential geometry.

June 2012 185 pp.
9780821849927 9,250.

Vol. 571: Gil, J. /de Jeu, R. / 467-083
Lewis, J. /Naranjo, J. /Raskind, W. /Xarles, X.:
Regulators

This volume contains the proceedings of the Regulators III Conference, held from July 12 to July 22, 2010, in Barcelona, Spain.
Regulators can be thought of as realizations from motivic cohomology, which is very difficult to compute, to more computable theories such as Hodge, Betti, l-adic, and Deligne cohomology.
It is a very intricate subject that thrives on its interaction with algebraic K-theory, arithmetic geometry, number theory, motivic cohomology, Hodge theory and mathematical physics.
The articles in this volume are a reflection of the various approaches to this subject, such as results on motivic cohomology, descriptions of regulators, a revisiting of a number of fundamental conjectures (such as new results pertaining to the Hodge and standard conjectures), and more.

July 2012 276 pp.
9780821853221 12,120.

A. M. S.

Progress in Mathematics,

Vol. 301: **Ruzhansky, M. / Sugimoto Mitsuru /Wirth, J. (eds.): Evolution Equations of Hyperbolic and Schrodinger Type: Asymptotics, Estimates and Nonlinearities** 467-160

Evolution equations of hyperbolic or more general p-evolution type form an active field of current research.
This volume aims to collect some recent advances in the area in order to allow a quick overview of ongoing research.
The contributors are first rate mathematicians.
This collection of research papers is centred around parametrix constructions and microlocal analysis; asymptotic constructions of solutions; energy and dispersive estimates; and associated spectral transforms. Applications concerning elasticity and general relativity complement the volume.

Aug. 2012 330 pp.
9783034804530 15,760.

Birkhauser

Asterisque,

Vol. 342: **Bahouri, P. /Fermanian-Kammerer, C. / Gallagher, I.: Phase-Space Analysis and Pseudodifferential Calculus on the Heisenberg Group** 467-114

A class of pseudodifferential operators on the Heisenberg group is defined. As it should be, this class is an algebra containing the class of differential operators. Furthermore, those pseudodifferential operators act continuously on Sobolev spaces and the loss of derivatives may be controled by the order of the operator.
Although a large number of works have been devoted in the past to the construction and the study of algebras of variable-coefficient operators, including some very interesting works on the Heisenberg group, our approach is different, and in particular puts into light microlocal directions and completes, with the Littlewood-Paley theory initiated in 2000 by Bahouri, Gerard and Xu, a microlocal analysis of the Heisenberg group.

Mar. 2012 127 pp.
9782856293348 7,800.

Vol. 341: **Delort, J.-M.: A Quasi-Linear Birkhoff Normal Forms Method** 467-125

Consider a nonlinear Klein-Gordon equation on the unit circle, with smooth data of size $\varepsilon \to 0$. A solution u which, for any $\kappa \in$, may be extended as a smooth solution on a time-interval $]-c_{\kappa}\varepsilon^{-\kappa}, c_{\kappa}\varepsilon^{-\kappa}[$ for some $c_{\kappa} > 0$ and for $0 < \varepsilon < \varepsilon_{\kappa}$, is called an almost global solution. It is known that when the nonlinearity is a polynomial depending only on u, and vanishing at order at least,Qat the origin, any smooth small Cauchy data generate, as soon as the mass parameter in the equation stays outside a subset of zero measure of $*_{+}$, an almost global solution, whose Sobolev norms of higher order stay uniformly bounded.
The goal of this paper is to extend this result to general Hamiltonian *quasi-linear* nonlinearities. These are the only *Hamiltonian* non linearities that depend not only on u, but also on its space derivative.

Mar. 2012 115 pp.
9782856293355 6,810.

Societe of Mathematique de France

Oxford Mathematical Monographs

Franchi, J. /Le Jan, Y.:

Hyperbolic Dynamics and Brownian Motion: An Introduction

467-178

This book illustrates the interplay between distinct domains of mathematics. There is no assumption that the reader is a specialist in any of these domains: only basic knowledge of linear algebra, calculus and probability theory is required.
The content can be summarized in three ways: Firstly, this book provides an introduction to hyperbolic geometry, based on the Lorentz group. The Lorentz group plays, in relativistic space-time, a role analogue to the rotations in Euclidean space.
The hyperbolic geometry is the geometry of the unit pseudo-sphere. The boundary of the hyperbolic space is defined as the set of light rays. Special attention is given to the geodesic and horocyclic flows.

Sep. 2012 336 pp.
9780199654109 10,100.

Kragh, H.:

467-031

Niels Bohr and the Quantum Atom: The Bohr Model of Atomic Structure 1913-1925

This book is the first book that focuses in detail on the birth and development of Bohr's atomic theory and gives a comprehensive picture of it. At the same time it offers new insight into Bohr's peculiar way of thinking, what Einstein once called his 'unique instinct and tact'.
Contrary to most other accounts of the Bohr atom, the book presents it in a broader perspective which includes the reception among other scientists and the criticism launched against it by scientists of a more conservative inclination.
Moreover, it discusses the theory as Bohr originally conceived it, namely, as an ambitious theory covering the structure of atoms as well as molecules. By discussing the theory in its entirety it becomes possible to understand why it developed as it did and thereby to use it as an example of the dynamics of scientific theories.

May 2012 440 pp.
9780199654987 7,070.

Duncan, A.:

467-284

The Conceptual Framework of Quantum Field Theory

The book attempts to provide an introduction to quantum field theory emphasizing conceptual issues frequently neglected in more "utilitarian" treatments of the subject.
The book is divided into four parts, entitled respectively "Origins", "Dynamics", "Symmetries", and "Scales".
The emphasis is conceptual - the aim is to build the theory up systematically from some clearly stated foundational concepts - and therefore to a large extent anti-historical, but two historical Chapters ("Origins") are included to situate quantum field theory in the larger context of modern physical theories.
The three remaining sections of the book follow a step by step reconstruction of this framework beginning with just a few basic assumptions: relativistic invariance, the basic principles of quantum mechanics, and the prohibition of physical action at a distance embodied in the clustering principle.

Sep. 2012 600 pp.
9780199573264 9,090.

Oxford University Press

Grundlehren der mathematischen wissenschaften,

Vol. 345: Komorowski, T. /Landim, C. /Olla, S.: 467-214
Fluctuations in Markov Processes:
Time Symmetry and Martingale Approximation

Diffusive phenomena in statistical mechanics and in other fields arise from markovian modeling & their study requires sophisticated mathematical tools. In infinite dimensional situations, time symmetry properties can be exploited in order to make martingale approximations, along the lines of the seminal work of Kipnis and Varadhan.
The present volume contains the most advanced theories on the martingale approach to central limit theorems.
Using the time symmetry properties of the Markov processes, the book develops the techniques that allow us to deal with infinite dimensional models that appear in statistical mechanics and engineering.
The first part contains a detailed exposition of the method, and can be used as a text for graduate courses. The second concerns application to exclusion processes, in which the duality methods are fully exploited.
The third part is about the homogenization of diffusions in random fields, including passive tracers in turbulent flows.

June 2012 **440 pp.**
9783642298790 **15,760.**

Lecture Notes in Mathematics,

Vol. 2053: Frohlich, S.: 467-133
Coulomb Frames in
the Normal Bundle of Surfaces in Euclidean Spaces:

This book is intended for advanced students and young researchers interested in the analysis of partial differential equations and differential geometry.
It discusses elementary concepts of surface geometry in higher-dimensional Euclidean spaces, in particular the differential equations of Gauss-Weingarten together with various integrability conditions and corresponding surface curvatures.
It includes a chapter on curvature estimates for such surfaces, and, using results from potential theory and harmonic analysis, it addresses geometric and analytic methods to establish the existence and regularity of Coulomb frames in their normal bundles, which arise as critical points for a functional of total torsion.

July 2012 **120 pp.**
9783642298455 **5,800.**

467-141
Vol. 2050: Klartag, B. /Mendelson, S. /Milman, V. (eds.)
Geometric Aspects of Functional Analysis:
Israel Seminar 2006-2010

This collection of original papers related to the Israeli GAFA seminar from the years 2006 to 2011 continues the long tradition of the previous volumes, which reflect the general trends of Asymptotic Geometric Analysis, understood in a broad sense, and are a source of inspiration for new research.
Most of the papers deal with various aspects of the theory, including classical topics in the geometry of convex bodies, inequalities involving volumes of such bodies or more generally, logarithmically-concave measures, valuation theory, probabilistic and isoperimetric problems in the combinatorial setting, volume distribution on high-dimensional spaces and characterization of classical constructions in Geometry and Analysis.

July 2012 **450 pp.**
9783642298486 **7,460.**

Springer

Andrews, G. /Berndt, B.:
Ramanujan's Lost Notebook, Part III.

This volume is the third of five volumes that the authors plan to write on Ramanujanss lost notebook and other manuscripts and fragments found in The Lost Notebook and Other Unpublished Papers, published by Narosa in 1988. 467-003
The ordinary partition function p(n) is the focus of this third volume. In particular, ranks, cranks, and congruences for p(n) are in the spotlight. Other topics include the Ramanujan tau-function, the Rogers-Ramanujan functions, highly composite numbers, and sums of powers of theta functions.
Table of contents: Preface.- Introduction.- 1. Ranks and Cranks, Part I.- 2. Ranks and Cranks, Part II.- 3. Ranks and Cranks, Part III.- 4. Ramanujan's Unpublished Manuscript on the Partition and Tau Functions.- 5. Theorems about the Partition Function on Pages 189 and 182.- 6. Congruences for Generalized Tau Functions on Page 178.- 7. Ramanujan's Forty Identities for the Rogers-Ramanujan Functions.- 8. Circular Summation.- 9. Highly Composite Numbers.- Scratch Work.- Location Guide.

July 2012 **434 pp.**
9781461438090 **15,760.**

Developments in Mathematics,

Vol. 28: **Farkas, H. /Gunning, R. /** 467-130
Knopp, M. /Taylor, B. (eds.):
From Fourier Analysis and Number Theory to Radon Transforms and Geometry:
In Memory of Leon Ehrenpreis

This publication is an outgrowth of a memorial conference for Leon Ehrenpreis held at Temple University, November 15-16, 2010.
In the spirit of Ehrenpreis's contribution to mathematics, the papers in this volume, written by prominent mathematicians, represent the wide breadth of subjects that Ehrenpreis traversed in his career, including partial differential equations, combinatorics, number theory, complex analysis, and some applied mathematics.
The papers in this volume generally contain all new results in the various fields in which Ehrenpreis worked.
The mature mathematician will find new mathematics and the advanced graduate student will find many new ideas to explore.
***A biographical sketch of Leon Ehrenpreis enhances the memorial tribute and gives the reader a glimpse into the life and career of a great mathematician and gentleman.**

Aug. 2012 **500 pp.**
9781461440741 **18,250.**

Vol. 27: **Abbas, S. /Benchohra, M. /N'Guerekata, G.:**
Topics in Fractional Differential Equations

During the last decade, there has been an explosion of interest in fractional dynamics as it was found to play a fundamental role in the modeling of a considerable number of phenomena; in particular the modeling of memory-dependent and complex media. 467-001
Fractional calculus generalizes integrals and derivatives to non-integer orders and has emerged as an important tool for the study of dynamical systems where classical methods reveal strong limitations. This book is addressed to a wide audience of researchers working with fractional dynamics, including mathematicians, engineers, biologists, and physicists.

July 2012 **344 pp.**
9781461440352 **16,590.**

Springer

Springer Proceedings in Mathematics and Statistics,

Vol. 22: **Decreusefond, L. /Najim, J. (eds.):** 467-124
Stochastic Analysis and Related Topics:
In Honour of Ali Suleyman Ustunel, Paris, June 2010

Since the early eighties, Ali Suleyman Ustunel has been one of the main contributors to the development of so-called Malliavin calculus.
In honor of his 60th birthday, several prominent researchers in this field gave truly exciting talks in Paris in June 2010.
This volume presents scientific contributions of that conference.
Probability theory is first and foremost aimed at solving real-life problems displaying randomness, and Markov processes are one of the key tools for modeling.
Their applications are illustrated through several papers on inventory control, mutation-selection in genetics and public-private partnerships.
Furthermore, stochastic differential equations, be they partial or ordinary, also play a key role in stochastic modeling.

July 2012 **159 pp.**
9783642299810 **16,590.**

Vol. 23: **Plaskota, L. /Wozniakowski, H. (eds.):**
Monte Carlo and Quasi-Monte Calro Methods 2010
May 2012 *686 pp.* *9783642274398* *21,570.*

Vol. 19: **Cummins, M. /Murphy, F. /Miller, J. (eds.):**
Topics in Numerical Methods for Finance
July 2012 *198 pp* *9781461434320* *16,590.*

Fields Institute Communications,

Vol. 62: **Miller, C. /Rolin, J.-P. /Speissegger, P. (eds.):**
Lecture Notes on o-Minimal Structures and Real Analytic Geometry 467-097

This volume was produced in conjunction with the Thematic Program in o-Minimal Structures and Real Analytic Geometry, 2009 at the Fields Institute. Five of the six contributions consist of notes from graduate courses associated with the program: Felipe Cano on a new proof of resolution of singularities for planar analytic vector fields; Chris Miller on o-minimality and Hardy fields; Jean-Philippe Rolin on the construction of o-minimal structures from quasianalytic classes; Fernando Sanz on non-oscillatory trajectories of vector fields; and Patrick Speissegger on pfaffian sets.

Aug. 2012 **202 pp.**
9781461440413 **13,270.**

Theoretical and Mathematical Physics

Blumenhagen, R. /Lust, D. /Theisen, S.: 467-275
Basic Concepts of String Theory

The purpose of this book is to thoroughly prepare the reader for research in string theory. It is intended as a textbook in the sense that, starting from the basics, the material is presented in a pedagogical and self-contained fashion. The emphasis is on the world-sheet perspective of closed strings and of open strings ending on D-branes, where two-dimensional conformal field theory is the main tool. Compactifications of string theory, with and without fluxes, and string dualities are also discussed from the space-time point of view, i.e. in geometric language.

July 2012 **750 pp.**
9783642294969 **13,270.**

Springer

Wiley Series in Pure and Applied Optics

Stegeman, G.: Nonlinear Optics: Phenomena, Materials and Devices 467-299

This book is based on tried and tested courses taught by the author, George Stegeman, who is one of the experimental pioneers in nonlinear optics. The book starts with second order phenomena, goes on to explain the derivation of nonlinear susceptibilities, and finishes with a thorough discussion of third order nonlinear effects.
Included is a simple "electron on a spring" model which helps readers begin their journey through the field of nonlinear optics.

June 2012 496 pp.
9781118072721 12,490.

Wiley Series in Probability and Statistics

Powell, W. /Ryzhov, I.: Optimal Learning 467-221

Everyday decisions are made without the benefit of accurate information. Optimal Learning develops the needed principles for gathering information to make decisions, especially when collecting information is time-consuming and expensive.
Designed for readers with an elementary background in probability and statistics, the book presents effective and practical policies illustrated in a wide range of applications, from energy, homeland security, and transportation to engineering, health, and business.

Apr. 2012 404 pp.
9780470596692 14,370.

Tourlakis, G.: Theory of Computation 467-053

In the (meta)theory of computing, the fundamental questions of the limitations of computing are addressed. These limitations, which are intrinsic rather than technology dependent, may immediatly rule out the existence of algorithmic solutions for some problems while for others they rule out efficient solutions.
The author's approach is anchored on the concrete (and assumed) practical knowledge about general computer programming, attained readers in a first year programming course, as well as the knowledge of discrete mathematics at the same level.

May 2012 416 pp.
9781118014783 14,370.

Muldowney, P.: A Modern Theory of Random Variation: With Applications in Stochastic Calculus, Financial Mathematics, and Feynman Integration 467-217

This book presents a self-contained study of the Riemann approach to the theory of random variation and assumes only some familiarity with probability or statistical analysis, basic Riemann integration, and mathematical proofs.
The author focuses on non-absolute convergence in conjunction with random variation. Any conception or understanding of the random variation phenomenon hinges on the notions of probability and its mathematical representation in the form of probability distribution functions.

July 2012 512 pp.
9781118166406 14,370.

Wiley

Dineen, S.: **Analysis:** 467-017
A Gateway to Understanding Mathematics

This book shows that it is possible to provide a fully rigorous treatment of calculus for those planning a career in an area that uses mathematics regularly (e.g., statistics, mathematics, economics, finance, engineering, etc.). It reveals to students on the ways to approach and understand mathematics. It covers efficiently and rigorously the differential and integral calculus, and its foundations in mathematical analysis.
It also aims at a comprehensive, efficient, and rigorous treatment by introducing all the concepts succinctly.

June 2012 324 pp.
9789814401388 8,000.

Brown, R.: 467-011
The Tangled Origins of the Leibnizian Calculus

This book is a detailed study of Gottfried Wilhelm Leibniz's creation of calculus from 1673 to the 1680s. We examine and analyze the mathematics in several of his early manuscripts as well as various articles published in the Acta Eruditorum. It studies some of the other lesser known "calculi" Leibniz created such as the Analysis Situs, delves into aspects of his logic, and gives an overview of his efforts to construct a Universal Characteristic, a goal that has its distant origin in the Ars Magna of the 13th century Catalan philosopher Raymond Llull, whose work enjoyed a renewed popularity in the century and a half prior to Leibniz.

Apr. 2012 600 pp.
9789814390798 15,000.

Kisil, V.: (with DVD-ROM)
Geometry of Mobius Transformations:
Elliptic, Parabolic and Hyperbolic Actions of SL(2,R)

Starting from elementary facts in group theory, the author unveils surprising new results about the geometry of circles, parabolas and hyperbolas, with the approach based on the Erlangen program of F Klein - who defined geometry as a study of invariants under a transitive group action.
The treatment of elliptic, parabolic and hyperbolic Mobius transformations is provided in a uniform way. This is possible due to an appropriate usage of complex, dual and double numbers. They form three potential commutative associative two-dimensional algebras, which are in perfect correspondences with the three types of geometries concerned. 467-182

June 2012 180 pp.
9781848168589 9,750.

Series on Knots and Everything,

Vol. 50: **Novikov, S. /Taimanov, I. /Golubyatnikov, V. (eds.):**
Topological Library -Part 3: 467-039
Spectral Sequences in Topology

The final volume of the three-volume edition, this book features classical papers on algebraic and differential topology published in the 1950s - 1960s. The partition of these papers among the volumes is rather conditional. The original methods and constructions from these works are properly documented for the first time in this book.
No existing book covers the beautiful ensemble of methods created in topology starting from approximately 1950.
That is, from Serre's celebrated "singular homologies of fiber spaces".

June 2012 600 pp.
9789814401302 22,370.

World Scientific Pub.

de Gruyter Proceedings in Mathematics

Bruno, A. /Batkhin, A. (eds.): 467-120

Painleve Equations and Related Topics: Proceedings of the Int'l Saint Petersburg, 2011

This is a proceeding of the international conference "Painleve Equations and Related Topics" which was taking place at the Euler International Mathematical Institute, a branch of the Saint Petersburg Department of the Steklov Institute of Mathematics of the Russian Academy of Sciences, in Saint Petersburg on June 17 to 23, 2011.
The survey articles discuss the following topics:
***General ordinary differential equations**
***Painleve equations and their generalizations**
***Painleve property Discrete Painleve equations Properties of solutions of all mentioned above equations**
***Reductions of PDE to Painleve equations and their generalizations**
***Ordinary Differential Equations systems equivalent to Painleve equations and their generalizations**
***Applications of the equations and the solutions**

Sep. 2012 **170 pp.**
9783110275582 **19,910.**

Sabelfeld, K. /Dimov, I.: 467-225

Monte Carlo Methods and Applications: Proceedings of the Eighth IMACS 2011, Borovets

This is the proceedings of the VIII. IMACS Seminar on Monte Carlo Methods2011, August 29 - September 2, 2011, held in Borovets, Bulgaria, and organized by the Institute of Information and Communication Technologies,Bulgarian Academy of Sciences in cooperation with Int'l Association for Mathematics and Computers in Simulation (IMACS).
Included are about 25 papers which cover all topics presented in the sessions of the Seminar: Stochastic Computation and Complexity of High Dimensional Problems, Sensitivity Analysis, High-performance Computations for Monte Carlo Applications, Stochastic Metaheuristics for Optimization Problems, Sequential Monte Carlo Methods for Large-scale Problems, Semiconductor Devices and Nanostructures.

Oct. 2012 **190 pp.**
9783110293470 **14,930.**

Inverse and Ill-Posed Problems Series,

***Vol. 57:* Kabanikhin, S. /Bektemisov, M. /Shishlenin, M.:**

Iterative Methods for Solving Inverse Problems with Incomplete Data

Solving inverse problems means the determination of shape or consistency of inaccessible objects from indirect measurements. 467-138
Those problems arise in many applications, e.g., medical imaging and earth surface explorations.
The mathematical modelling of some of those problems leads to inverse problems for boundary value problems for differential equations with incomplete given data.
The present book provides an introduction to the numerical solution of the latter class of problems.

21304 **450 pp.**
9783111731308 **39,670.**

de Gruyter

London Mathematical Society Lecture Note Series,

Vol. 403: Cucker, F. /Krick, T. /Pinkus, A. /Szanto, A.:
Foundations of Computational Mathematics, Budapest 2011 467-013

The Foundations of Computational Mathematics meetings are a platform for cross-fertilisation between numerical analysis, mathematics and computer science.
This volume is a collection of articles based on plenary presentations, given at the 2011 meeting, by some of the world's foremost authorities in computational mathematics.
The topics covered reflect the breadth of research within the area as well as the richness of interactions between seemingly unrelated branches of pure and applied mathematics.
As a result this volume will be of interest to researchers in the field of computational mathematics and also to non-experts who wish to gain some insight into the state of the art in this active and significant field.

Dec. 2012 **240 pp.**
9781107604070 **9,040.**

Vol. 401: Deng, B. /Du, J. /Fu, Q.: 467-080
A Double Hall Algebra Approach to Affine Quantum Schur-Weyl Theory
Nov. 2012 *200 pp.* *9781107608603* *6,780.*

---

*Vol. ***:* Sofonea, M.: 467-166
Mathematical Models in Contact Mechanics

This text provides a complete introduction to the theory of variational inequalities with emphasis on contact mechanics.
It covers existence, uniqueness and convergence results for variational inequalities, including the modelling and variational analysis of specific frictional contact problems with elastic, viscoelastic and viscoplastic materials.
New models of contact are presented, including contact of piezoelectric materials.
Particular attention is paid to the study of history-dependent quasivariational inequalities and to their applications in the study of contact problems with unilateral constraints.

Sep. 2012 **280 pp.**
9781107606654 **9,040.**

McCleary, J.: **Geometry From A Differentiable Viewpoint, 2nd ed.** 467-184/185

The development of geometry from Euclid to Euler to Lobachevsky, Bolyai, Gauss, and Riemann is a story that is often broken into parts - axiomatic geometry, non-Euclidean geometry, and differential geometry.
This poses a problem for undergraduates: Which part is geometry? What is the big picture to which these parts belong? In this introduction to differential geometry, the parts are united with all of their interrelations, motivated by the history of the parallel postulate.
Beginning with the ancient sources, the author first explores synthetic methods in Euclidean and non-Euclidean geometry and then introduces differential geometry in its classical formulation, leading to the modern formulation on manifolds such as space-time.
New topics include Clairaut's relation for geodesics, Euclid's geometry of space, further properties of cycloids and map projections, and the use of transformations such as the reflections of the Beltrami disk.

Oct. 2012 **350 pp.**
9780521116077/9780521133111 **12,430./5,080.** (Paper ed.)

Cambridge

Cambridge Studies in Advanced Mathematics,

Vol. 136: **Brodmann, M.:**
Local Cohomology, 2nd ed.

This second edition of a successful graduate text provides a careful and detailed algebraic introduction to Grothendieck's local cohomology theory, including in multi-graded situations, and provides many illustrations of the theory in commutative algebra and in the geometry of quasi-affine and quasi-projective varieties.
Topics covered include Serre's Affineness Criterion, the Lichtenbaum-Hartshorne Vanishing Theorem, Grothendieck's Finiteness Theorem and Faltings' Annihilator Theorem, local duality and canonical modules, the Fulton-Hansen Connectedness Theorem for projective varieties, and connections between local cohomology and both reductions of ideals and sheaf cohomology.

Dec. 2012 **500 pp.**
9780521513630 **8,470.**

Vol. 137: **Muscalu, C. /Schlag, W.:**
Classical and Multilinear Harmonic Analysis
Nov. 2012 *400 pp.* *9780521882453* *6,210.*

Vol. 135: **Maggi, F.:** 467-152
Sets of Finite Perimeter and Geometric Variational Problems
Sep. 2012 *450 pp.* *9781107021037* *8,470.* 467-150

Australian Math. Society Lecture Series,

*Vol. **:* **Henderson, A.:**
Representations of Lie Algebras: 467-085
An Introduction Through *GLn*

This bold and refreshing approach to Lie algebras assumes only modest prerequisites (linear algebra up to the Jordan canonical form and a basic familiarity with groups and rings), yet it reaches a major result in representation theory: the highest-weight classification of irreducible modules of the general linear Lie algebra.
The book begins with a motivating chapter explaining the context and relevance of Lie algebras and their representations and concludes with a guide to further reading.
Numerous examples and exercises with full solutions are included. Based on the author's own introductory course on Lie algebras, this book has been thoroughly road-tested by advanced undergraduate and beginning graduate students and it is also suited to individual readers wanting an introduction to this important area of mathematics.

Sep. 2012 **160 pp.**
9781107653610 **5,650.**

Horn, R.: 467-089/090
Matrix Analysis, 2nd ed.

This new edition of the acclaimed text presents results of both classic and recent matrix analyses using canonical forms as a unifying theme, and demonstrates their importance in a variety of applications.
The book opens with an extended summary of useful concepts and facts and includes numerous new topics and features, such as: - New sections on the singular value and CS decompositions - New applications of the Jordan canonical form - A new section on the Weyr canonical form

Nov. 2012 **600 pp.**
9780521839402 /9780521548236 **14,440./ 6,330.** (Paper ed.)

Cambridge

Cambridge Tracts in Mathematics,

Vol. 197: Kaniuth,E./Taylor,K. 467-092

Induced Representations of Locally Compact Groups

The dual space of a locally compact group G consists of the equivalence classes of irreducible unitary representations of G.
This book provides a comprehensive guide to the theory of induced representations and explains its use in describing the dual spaces for important classes of groups. It introduces various induction constructions and proves the core theorems on induced representations, including the fundamental imprimitivity theorem of Mackey and Blattner.
An extensive introduction to Mackey analysis is applied to compute dual spaces for a wide variety of examples. Fell's contributions to understanding the natural topology on the dual are also presented.
In the final two chapters, the theory is applied in a variety of settings including topological Frobenius properties and continuous wavelet transforms.

Nov. 2012 200 pp.
9780521762267 7,340.

Vol. 194: Kuksin, S.:

Mathematics of Two-Dimensional Turbulence

This book is dedicated to the mathematical study of two-dimensional statistical hydrodynamics and turbulence, described bythe 2D Navier-Stokes system with a random force. 467-144
The authors' main goal is to justify the statistical properties of a fluid's velocity field u(t,x) that physicists assume in their work.
They rigorously prove that u(t,x) converges, as time grows, to a statistical equilibrium, independent of initial data.
They use this to study ergodic properties of u(t,x) - proving, in particular, that observables f(u(t,.)) satisfy the strong law of large numbers and central limit theorem.
They also discuss the inviscid limit when viscosity goes to zero, normalising the force so that the energy of solutions stays constant, while their Reynolds numbers grow to infinity.
They show that then the statistical equilibria converge to invariant measures of the 2D Euler equation and study these measures.

Oct. 2012 340 pp.
9781107022829 9,610.

---

*Vol. ***:* Chiswell, I. /Muller, T.: 467-075

A Universal Construction for Groups Acting Freely on Real Trees

The theory of R-trees is a well-established and important area of geometric group theory and in this book the authors introduce a construction that provides a new perspective on group actions on R-trees.
They construct a group RF(G), equipped with an action on an R-tree, whose elements are certain functions from a compact real interval to the group G.
They also study the structure of RF(G), including a detailed description of centralizers of elements and an investigation of its subgroups and quotients.
Any group acting freely on an R-tree embeds in RF(G) for some choice of G.
Much remains to be done to understand RF(G), and the extensive list of open problems included in an appendix could potentially lead to new methods for investigating group actions on R-trees, particularly free actions.

Nov. 2012 300 pp.
9781107024816 9,610.

Cambridge