

# Yurinsha Book News

*Graduate Studies in Mathematics,*

443-106

**Vol. 19: Evans, L.:**  
**Partial Differential Equations, 2nd ed.**

This is the second edition of the now definitive text on partial differential equations (PDE).

It offers a comprehensive survey of modern techniques in the theoretical study of PDE with particular emphasis on nonlinear equations. Its wide scope and clear exposition make it a great text for a graduate course in PDE. For this edition, the author has made numerous changes, including

\* a new chapter on nonlinear wave equations, \* more than 80 new exercises, \* several new sections, \* a significantly expanded bibliography.

"I use Partial Differential Equations to prepare my students for their Topic exam, which is a requirement before starting working on their dissertation. The book provides an excellent account of PDE's ...

I am very happy with the preparation it provides my students.

--Carlos Kenig, University of Chicago"

Evans' book has already attained the status of a classic.

It is a clear choice for students just learning the subject, as well as for experts who wish to broaden their knowledge ... An outstanding reference for many aspects of the field.

--Rafe Mazzeo, Stanford University

Apr. 2010

749 pp.

9780821849743

12,740.

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. 443**

**May 2010**

敬理科学 **友 隣 社** 洋書専門

*Graduate Studies in Mathematics,***Vol. 116: Cerda, J.:**

443-099

**Linear Functional Analysis**

This book presents the basic facts of linear functional analysis as related to fundamental aspects of mathematical analysis and their applications. The exposition avoids unnecessary terminology and generality and focuses on showing how the knowledge of these structures clarifies what is essential in analytic problems.

The material in the first part of the book can be used for an introductory course on functional analysis, with an emphasis on the role of duality. The second part introduces distributions and Sobolev spaces and their applications. Convolution and the Fourier transform are shown to be useful tools for the study of partial differential equations.

Fundamental solutions and Green's functions are considered and the theory is illustrated with several applications.

In the last chapters, the Gelfand transform for Banach algebras is used to present the spectral theory of bounded and unbounded operators, which is then used in an introduction to the basic axioms of quantum mechanics.

July 2010

336 pp.

9780821851159

8,490.

*Mathematical Surveys and Monographs,***Vol. 164: Bogachev, V.:**

443-096

**Differentiable Measures & the Malliavin Calculus**

This book provides the reader with the principal concepts and results related to differential properties of measures on infinite dimensional spaces. In the finite dimensional case such properties are described in terms of densities of measures with respect to Lebesgue measure.

In the infinite dimensional case new phenomena arise.

For the first time a detailed account is given of the theory of differentiable measures, initiated by S.V.Fomin in the 1960s; since then the method has found many various important applications.

Differentiable properties are described for diverse concrete classes of measures arising in applications, for example, Gaussian, convex, stable, Gibbsian, and for distributions of random processes.

July 2010

501 pp.

9780821849934

15,480.

*Translations of Mathematical Monographs,***Vol. 238: Vaksman, K.:**

443-164

**Quantum Bounded Symmetric Domains**

This book provides exposition of the basic theory of quantum bounded symmetric domains. The area became active in the late 1990s at a junction of noncommutative complex analysis and extensively developing theory of quantum groups.

It is well known that the classical bounded symmetric domains involve a large number of nice constructions and results of the theory of  $C^*$ -algebras, theory of functions and functional analysis, representation theory of real reductive Lie groups, harmonic analysis, and special functions.

In a surprising advance of the theory of quantum bounded symmetric domains, it turned out that many classical problems admit elegant quantum analogs.

July 2010

270 pp.

9780821849095

14,380.

**A. M. S.**

Aigner, M. /Behrends, E. (eds.): 443-001  
**Mathematics Everywhere**

Mathematics is all around us. Often we do not realize it, though. Mathematics Everywhere is a collection of presentations on the role of mathematics in everyday life, through science, technology, and culture. The common theme is the unique position of mathematics as the art of pure thought and at the same time as a universally applicable science.

June 2010 327 pp.  
 9780821843499 6,710.

*Contemporary Mathematics,*

*Vol. 516:* Viana, M. /Wynn, H.: 443-081  
**Algebraic Methods in  
 Statistics and Probability II**

This volume is based on lectures presented at the AMS Special Session on Algebraic Methods in Statistics and Probability--held March 27-29, 2009, at the University of Illinois at Urbana-Champaign--and on contributed articles solicited for this volume.

A decade after the publication of Contemporary Mathematics Vol. 287, the present volume demonstrates the consolidation of important areas, such as algebraic statistics, computational commutative algebra, and deeper aspects of graphical models.

July 2010 516 pp.  
 9780821848913 14,380.

*Vol. 515:* Menendez, S. /Perez, J. (eds.): 443-196  
**Mathematics in Finance**

This volume contains survey papers on mathematical finance based on some courses given at the "Lluis Santalo" Summer School of the Real Sociedad Matematica Espanola, held in July 2007 at the Universidad Internacional Menendez Pelayo, Santander Spain). The primary topics are pathwise approximations of stochastic differential equations, hedge funds, and credit derivatives.

The paper by L. Seco and F. Chen provides a systematic survey of hedge funds from a rigorous mathematical point of view. The related paper by M. Escobar, S. Kramer, F. Scheibl, L. Seco and R. Zagst, introduces a new theoretical framework for the pricing of hedge funds' equity, inspired by the framework of Black and Cox for the valuation of company equity as a call option.

July 2010 152 pp.  
 9780821846735 8,080.

*CBMS Regional Conference Series in Mathematics,*

*Vol. 112:* Wang, Z.: 443-165  
**Topological Quantum Computation**

This book expands on the author's CBMS lectures on knots and topological quantum computing and is intended as a primer for mathematically inclined graduate students.

With an emphasis on introducing basic notions and current research, this book gives the first coherent account of the field, covering a wide range of topics: Temperley-Lieb-Jones theory, the quantum circuit model, ribbon fusion category theory, topological quantum field theory, anyon theory, additive approximation of the Jones polynomial, anyonic quantum computing models, and mathematical models of topological phases of matter.

May 2010 115 pp.  
 9780821849309 4,660.

**A. M. S.**

*Monographs in Mathematics,***Vol. \*\*\*: Volpert, V.:** 443-138**Elliptic Partial Differential Equations, Vol. 1:  
Fredholm Theory of Elliptic Problems in Unbounded Domains**

The theory of elliptic partial differential equations develops during about two centuries together with electrostatics, heat and mass diffusion, hydrodynamics and many other applications. It remains one of the most rapidly developing fields of mathematics. The theory of general elliptic problems is presented in the first volume of the book.

A priori estimates, normal solvability and Fredholm property, index, operators with a parameter, nonlinear Fredholm operators are discussed. A particular attention is brought to elliptic problems in unbounded domains which are not yet sufficiently well presented in the existing literature and which require some special approaches.

Nov. 2010

600 pp.

9783034605366

18,510.

*Operator theory: Advances and Applications,***Vol. \*\*\*: Ball, J. /Bolotnikov, V. /Helton, J. /** 443-090**Rodman, L. /Spitkovsky, I. (eds.):****Topics in Operator Theory 2 Vols. Set**

The first volume of a collection of original and review articles on recent advances and new directions in a multifaceted and interconnected area of mathematics and its applications. It encompasses many topics in theoretical developments in operator theory and its diverse applications in applied mathematics, physics, engineering, and other disciplines. The purpose is to bring in one volume many important original results of cutting edge research as well as authoritative review of recent achievements, challenges, and future directions in the area of operator theory and its applications.

The second volume of a collection of original and review articles on recent advances and new directions in a multifaceted and interconnected area of mathematics and its applications. It encompasses many topics in theoretical developments in operator theory and its diverse applications in applied mathematics, physics, engineering, and other disciplines.

Apr. 2010

1000 pp.

9783034601634

57,830.

**Vol. 210: Duduchava, R. /** 443-104**Gohberg, I. /Grudsky, S. /Rabinovich, V. (eds.):****Recent Trends in Toeplitz and  
Pseudodifferential Operators**

The aim of the book is to present new results in operator theory and its applications. In particular, the book is devoted to operators with automorphic symbols, applications of the methods of modern operator theory and differential geometry to some problems of theory of elasticity, quantum mechanics, hyperbolic systems of partial differential equations with multiple characteristics, Laplace-Beltrami operators on manifolds with singular points.

Moreover, the book comprises new results in the theory of Wiener-Hopf operators with oscillating symbols, large hermitian Toeplitz band matrices, commutative algebras of Toeplitz operators, and discusses a number of other topics.

Dec. 2010

400 pp.

9783034605472

24,120.

**Birkhauser**

*Frontiers in Mathematics*

Ostvaer, P.:

443-073

**Homotopy Theory of  $C^*$ -Algebras**

This book introduces a modern homotopy theory for  $C^*$ -algebras. One basic idea of the setup is to merge  $C^*$ -algebras and spaces studied in algebraic topology into one category comprising  $C^*$ -spaces. These objects are suitable fodder for standard homotopy theoretic moves, leading to unstable and stable model structures. With the foundations in place one is led to natural definitions of invariants for  $C^*$ -spaces such as homology and cohomology theories, K-theory and zeta-functions.

Aug. 2010

160 pp.

9783034605649

5,600.

*Progress in Mathematical Physics,*

Vol. 59: del Castillo, G.:

443-085

**Spinors in Four-Dimensional Spaces**

Without using the customary Clifford algebras frequently studied in connection with the representations of orthogonal groups, this book gives an elementary introduction to the two component spinor formalism for four-dimensional spaces with any signature.

Some of the useful applications of four-dimensional spinors, such as Yang-Mills theory, are derived in detail using illustrative examples. Key topics and features: \* Uniform treatment of the spinor formalism for four-dimensional spaces of any signature, not only the usual signature (+ + + -) employed in relativity \* Examples taken from Riemannian geometry and special or general relativity are discussed in detail, emphasizing the usefulness of the two-component spinor formalism

Sep. 2010

176 pp.

9780817649838

13,720.

*Oberwolfach Seminars,*

Vol. \*\*: Hamenstadt, U. /Lecuire, C. /Otal, J.:

443-154

**Applications of Teichmüller Theory to 3-Manifolds**

This book contains a modern treatment of the Weil-Petersson geometry of Teichmüller space and an exposition of some recent results on the volume of convex cores of hyperbolic 3-manifolds.

It also contains a complete proof of the ending lamination conjecture for hyperbolic 3-manifolds which are diffeomorphic to the product of a surface with the real line and whose injectivity radius is bounded from below.

Apr. 2011

200 pp.

9783764387921

7,470.

Vol. 42: Brokate, M. et al.:

443-098

**An Introduction to Analysis, Adaptivity and Multigrid for Variational Inequalities**

Variational inequalities provide the mathematical framework for a variety of nonlinear and non-smooth phenomena in science and engineering. Efficient and reliable solution procedures are closely linked to the mathematics of function spaces and partial differential equations. The main subjects of this book are a posteriori error analysis and convergence of adaptive finite element methods, the treatment of multigrid methods and multilevel methods with solution-dependent multilevel bases.

July 2010

180 pp.

9783034600682

4,660.

**Birkhauser**

Vol. 128: Terras, A.:

443-080

**Zeta Functions of Graphs**

Graph theory meets number theory in this stimulating book.

Thara zeta functions of finite graphs are reciprocals of polynomials, sometimes in several variables. Analogies abound with number-theoretic functions such as Riemann/Dedekind zeta functions.

For example, there is a Riemann hypothesis (which may be false) and prime number theorem for graphs.

Explicit constructions of graph coverings use Galois theory to generalize Cayley and Schreier graphs. Then non-isomorphic simple graphs with the same zeta are produced, showing you cannot hear the shape of a graph. The spectra of matrices such as the adjacency and edge adjacency matrices of a graph are essential to the plot of this book, which makes connections with quantum chaos and random matrix theory, plus expander/Ramanujan graphs of interest in computer science.

Nov. 2010

200 pp.

9780521113670

7,920.

**Mathematical Science Research Institute Publications,**

Vol. \*\*: Kirsten, K. /Williams, F. (eds.):

443-115

**A Window into Zeta and Modular Physics**

This book provides an introduction to (1) various zeta functions (for example, Riemann, Hurwitz, Barnes, Epstein, Selberg, and Ruelle), including graph zeta functions; (2) modular forms (Eisenstein series, Hecke and Dirichlet L-functions, Ramanujan's tau function, and cusp forms); and (3) vertex operator algebras (correlation functions, quasi-modular forms, modular invariance, rationality, and some current research topics including higher genus conformal field theory).

Various concrete applications of the material to physics are presented. These include Kaluza-Klein extra dimensional gravity, Bosonic string calculations, an abstract Cardy formula for black hole entropy, Patterson-Selberg zeta function expression of one-loop quantum field and gravity partition functions, Casimir energy calculations, atomic Schrodinger operators, Bose-Einstein condensation, heat kernel asymptotics, random matrices, quantum chaos, elliptic and theta function solutions of Einstein's equations, a soliton-black hole connection in two-dimensional gravity, and conformal field theory.

June 2010

360 pp.

9780521199308

11,880.

**Encyclopedia of Mathematics and its Applications,**

Vol. 137: Berstel, J. /Reutenauer, C.:

443-058

**Noncommutative Rational Series with Applications**

The algebraic theory of automata was created by Schutzenberger and Chomsky over 50 years ago and there has since been a great deal of development. Classical work on the theory to noncommutative power series has been augmented more recently to areas such as representation theory, combinatorial mathematics and theoretical computer science.

This book presents to an audience of graduate students and researchers a modern account of the subject and its applications. The algebraic approach allows the theory to be developed in a general form of wide applicability.

Nov. 2010

250 pp.

9780521190220

10,560.

**Cambridge**

*London Mathematical Society Lecture Note Series,***Vol. 378: Bingham, N. /Goldie, C. (eds.):** 443-003**Probability and Mathematical Genetics:  
Papers in Honour of Sir John Kingman**

Papers in probability concentrate on combinatorial and structural aspects, in particular exchangeability and regeneration.

The Kingman coalescent links probability with mathematical genetics and is fundamental to the study of the latter.

This has implications across the whole of genomic modelling including the Human Genome Project. Other papers in mathematical population genetics range from statistical aspects including heterogeneous clustering, to the assessment of molecular variability in cancer genomes.

July 2010

350 pp.

9780521145770

12,140.

**Vol. 377: Berhuy, G.:**

443-057

**An Introduction to****Galois Cohomology and Its Applications**

The first part is self contained and provides the basic results of the theory, including a detailed construction of the Galois cohomology functor, as well as an exposition of the general theory of Galois descent.

The whole theory is motivated and illustrated using the example of the descent problem of conjugacy classes of matrices.

The second part of the book gives an insight of how Galois cohomology may be useful to solve some algebraic problems in several active research topics, such as inverse Galois theory, rationality questions or essential dimension of algebraic groups.

Sep. 2010

330 pp.

9780521738668

9,110.

**Vol. 376: Linton, S. /Ruskuc, N. /Vatter, V.:**

443-069

**Permutation Patterns**

Permutation patterns is a thriving area of combinatorics that relates to many other areas of mathematics, including graph theory, enumerative combinatorics, model theory, the theory of automata and languages, and bioinformatics.

Arising from the Fifth International Conference on Permutation Patterns, held in St Andrew's in June 2007, this volume contains a mixture of survey and research articles by leading experts, whom include the two invited speakers, Martin Klazar and Mike Atkinson.

June 2010

360 pp.

9780521728348

9,900.

**Vol. \*\*\*: Mackenzie, K.:**

443-071

**General Theory of****Lie Groupoids and Lie Algebroids**

This comprehensive modern account of the theory of Lie groupoids and Lie algebroids reveals their importance in differential geometry, in particular, their relations with Poisson geometry and general connection theory.

It covers much research since the mid 1980s, including the first analysis in book form of Poisson groupoids, Lie bialgebroids and double vector bundles.

The volume will be of great interest to all learning the modern theory of Lie groupoids and Lie algebroids.

May 2011

540 pp.

9780521678346

9,110.

**Cambridge**

Zhang, Q.:

443-141

**Sobolev Inequalities,  
Heat Kernels under Ricci Flow,  
and the Poincare Conjecture**

Covering the field of analysis on Riemann manifold, this book focuses on Sobolev inequalities and their applications to analysis on manifolds and Ricci flow.

It shows how to use the tools of Sobolev embedding and heat kernel estimates to study Ricci flows in research areas such as surgery, which has attracted much attention.

One of the main applications discussed is the clarification and simplification of the proof of the Poincare conjecture, for which Perelman was awarded the Fields Medal.

July 2010  
9781439834596

356 pp.  
10,500.

*Statistics: Textbooks and Monographs Series,*

Ando Tomohiro :

443-171

**Bayesian Model Selection and  
Statistical Modeling**

Bayesian model selection is a fundamental part of the Bayesian statistical modeling process.

The quality of these solutions usually depends on the goodness of the constructed Bayesian model.

Realizing how crucial this issue is, many researchers and practitioners have been extensively investigating the Bayesian model selection problem.

This book provides comprehensive explanations of the concepts and derivations of the Bayesian approach for model selection and related criteria, including the Bayes factor, the Bayesian information criterion (BIC), the generalized BIC, and the pseudo marginal likelihood.

It also includes a wide range of practical examples of model selection criteria.

June 2010  
9781439836149

304 pp.  
13,500.

Wellek, S.:

443-206

**Testing Statistical Hypotheses of  
Equivalence and Noninferiority, 2nd ed.**

Yet published work on the general methodology remains scattered in specialists' journals, and for the most part, it focuses on the relatively narrow topic of bioequivalence assessment. With a far broader perspective, Testing Statistical Hypotheses of Equivalence provides the first comprehensive treatment of statistical equivalence testing.

The author addresses a spectrum of specific, two-sided equivalence testing problems, from the one-sample problem with normally distributed observations of fixed known variance to problems involving several samples and multivariate data.

The treatment includes a concise review of basic mathematical results on optimal tests for equivalence, and the author makes available on the Internet a collection of computer programs that allow easy implementation of the methods presented.

In a field as complex and rich in potential applications as equivalence testing, Testing Statistical Hypotheses of Equivalence stands alone as a coherent reference that furnishes both the theoretical and practical tools needed for dealing with equivalence trials of any complexity and in any phase.

June 2010  
9781439808184

432 pp.  
13,500.

**Chapman & Hall**

*Springer Monographs in Mathematics*

Butkovic, P.:

443-059

**Max-Linear Systems:  
Theory and Algorithms**

A welcome introduction to the subject of max-plus (tropical) linear algebra, and in particular algorithmic problems, *Max-linear Systems: Theory and Algorithms* offers a consolidation of both new and existing literature, thus filling a much-needed gap.

Providing the fundamentals of max-algebraic theory in a comprehensive and unified form, in addition to more advanced material with an emphasis on feasibility and reachability, this book presents a number of new research results.

Topics covered range from max-linear systems and the eigenvalue-eigenvector problem to robustness of matrices, max-linear programs, linear independence, and matrix scaling.

This book assumes no prior knowledge of max-algebra and much of the theory is illustrated with numerical examples, complemented by exercises, and accompanied by both practical and theoretical applications. Open problems are also demonstrated.

June 2010

275 pp.

9781849962988

10,660.

*Springer Undergraduate Mathematics*

Hazrat, R.:

443-021

**Mathematica,  
A Problem-Centered Approach**

While based on a computer algebra course taught to undergraduate students of mathematics, science, engineering and finance, the book also includes chapters on calculus and solving equations, and graphics, thus covering all the basic topics in Mathematica.

With its strong focus upon programming and problem solving, and an emphasis on using numerical problems that do not need any particular background in mathematics, this book is also ideal for self-study and as an introduction to researchers who wish to use Mathematica as a computational tool.

May 2010

180 pp.

9781849962506

7,470.

*Algorithms and Computation in Mathematics,*

Vol. 25: Loera, J. /Rambau, J. /Santos Leal, F.: 443-070

**Triangulations:****Structures for Algorithms and Applications**

Triangulations appear everywhere, from the volume computations and meshing to algebra and topology.

This book studies subdivisions and triangulations of polyhedral regions and point sets, and presents the first comprehensive treatment of the theory of secondary polytopes and related topics.

A central theme of the book is the use of the rich structure of the space of triangulations to solve computational problems (e.g., counting the number of triangulations or finding optimal triangulations with respect to various criteria), as well as for setting up connections to applications in algebra, computer science, combinatorics, and optimization.

Aug. 2010

500 pp.

9783642129704

28,040.

**Springer**

*Lecture Notes in Mathematics*

**Vol. 1998: Abate, M. /Bedford, E. /Brunella, M. /  
Dinh, T.-C. /Schleicher, D. /Sibony, N. /Gentili, G. /  
Guenot, J. /Giorgio, P. (eds.):  
Holomorphic Dynamical Systems:  
Cetraro, Italy, 2008**

The contributions provide an ample description of the phenomena occurring in central themes of holomorphic dynamics such as automorphisms and meromorphic self-maps of projective spaces, of entire maps on complex spaces and holomorphic foliations in surfaces and higher dimensional manifolds, elaborating on the different techniques used and familiarizing readers with the latest findings on current research topics.

Aug. 2010 348 pp. 13,080.  
9783642131707

*Graduate Texts in Mathematics,*

**Vol. 258: Guler, O.: 443-222  
Foundations of Optimization in Finite Dimensions**

The book gives a detailed and rigorous treatment of the theory of optimization (unconstrained optimization, nonlinear programming, semi-infinite programming, etc.) in finite-dimensional spaces. The fundamental results of convexity theory and the theory of duality in nonlinear programming and the theories of linear inequalities, convex polyhedra, and linear programming are covered in detail. Over two hundred, carefully selected exercises should help the students master the material of the book and give further insight. Some of the most basic results are proved in several independent ways in order to give flexibility to the instructor.

July 2010 340 pp. 8,030.  
9780387344317

*Mathematiques et Applications,*

**Vol. 68: Despres, B.: 443-010  
Lois de Conservations Euleriennes,  
Lagrangiennes et Methodes Numeriques**

It has long been observed that systems of conservation laws written in the Lagrange variable offer a good alternative for the numerical computation of approximate solutions. In this monograph we seek to develop a systematic presentation of the use of the Lagrange variable for the analysis and discretization of systems of conservation laws arising in continuum mechanics.

May 2010 300 pp. 9,750.  
9783642116568

*Selected Works in Probability and Statistics*

**Gine, E. /Koltchinskii, V. /Norvaisa, R. (eds.): 443-019  
Selected Works of R. M. Dudley**

For almost fifty years, Richard M. Dudley has been extremely influential in the development of several areas of Probability. His work on Gaussian processes led to the understanding of the basic fact that their sample boundedness and continuity should be characterized in terms of proper measures of complexity of their parameter spaces equipped with the intrinsic covariance metric.

June 2010 496 pp. 20,560.  
9781441958204

**Springer**

**Wong, P.-M.:**  
**Theory of Complex Finsler Geometry and  
 Geometry of Intrinsic Metrics** 443-165/166

This book presents the theory of complex Finsler geometry by integrating the traditional differential geometric approach with the analytic approach of complex analysis and the algebraic approach of algebraic geometry.

Finsler geometry is treated as a special case of the geometry associated with the complex Monge-Ampere equation.

The theory of intrinsic metrics, especially the Kobayashi and the Caratheodory metrics, in complex analysis provides a wealth of important examples of complex Finsler manifolds.

Furthermore, algebraic geometric techniques are very powerful in extending the classical Schwarz lemma, which is a highly indispensable tool in the classical theory of Finsler geometry and holomorphic curves, to more sophisticated and useful settings.

Dec. 2010

300 pp.

9781848163492/9781848163508

12,330./7,530. (Paper ed.)

*Series on Knots and Everything,*

**Vol. \*\*: Kauffman, L. /Lambropoulou, S. / 443-155  
 Jablan, S. /Przytycki, J. (eds.):**

**Introductory Lectures on Knot Theory:**

Selected Lectures Presented at the Advanced School and Conference on **Knot Theory & Its Applications to Physics and Biology ICTP, Trieste**  
 Knot theory is a very special topological subject: the classification of embeddings of a circle or collection of circles into three-dimensional space. This is a classical topological problem and a special case of the general placement problem: Understanding the embeddings of a space X in another space Y.

There have been exciting new developments in the area of knot theory and 3-manifold topology in the last 25 years.

From the Jones, Homflypt and Kauffman polynomials, quantum invariants of 3-manifolds, through, Vassiliev invariants, topological quantum field theories, to relations with gauge theory type invariants in 4-dimensional topology.

Apr. 2011

550 pp.

9789814307994

18,910.

**Olshevsky, V. /Tyrtshnikov, E. (eds.): 443-072  
 Matrix Methods:**

**Theory Algorithms and Applications;**

**Dedicated to the Memory of Gene Golub**

Matrix methods provide the key to many problems in pure and applied mathematics. However, linear algebra theory, numerical algorithms and matrices in FEM/BEM applications usually live as if in three separate worlds. In this volume, maybe for the first time ever, they are compiled together as one entity as it was at the Moscow meeting, where the algebraic part was impersonated by Hans Schneider, algorithms by Gene Golub, and applications by Guri Marchuk. All topics intervened in plenary sessions are specially categorized into three sections of this volume.

The soul of the meeting was Gene Golub, who rendered a charming "Golub's dimension" h to the three main axes of the conference topics.

May 2010

600 pp.

9789812836014

15,750.

**World Scientific**

Ran, A. /te Riele, H. /Wiegerinck, J. (eds.):

**European Congress of Mathematics Amsterdam, 2008**

The 5th European Congress of Mathematics (SECM) took place in Amsterdam, The Netherlands, 2008, with about 1000 participants from 68 different countries. Ten plenary and thirty-three invited lectures were delivered. Three science lectures outlined applications of mathematics in other sciences: climate change, quantum information theory and population dynamics. As in the four preceding EMS congresses, ten EMS prizes were granted to very promising young mathematicians.

In addition, the Felix Klein Prize was awarded, for the second time, for an application of mathematics to a concrete and difficult industrial problem. There were twenty-two minisymposia, spread over the whole mathematical area. Two round table meetings were organized: one on industrial mathematics and one on mathematics and developing countries.

Apr. 2010 488 pp. 438-038  
9783037190777 14,590.

*ESI Lectures in Mathematics and Physics*

Straube, E.:

438-137

**Lectures on the  $L^2$ -Sobolev Theory of the  $\bar{\partial}$ -Neuman**

The introductory chapter provides an overview of the contents and puts them in historical perspective. The second chapter presents the basic  $L^2$ -theory. Following is a chapter on the subelliptic estimates on strictly pseudoconvex domains. The two final chapters on compactness and on regularity in Sobolev spaces bring the reader to the frontiers of research.

Prerequisites are a solid background in basic complex and functional analysis, including the elementary  $L^2$ -Sobolev theory and distributions.

Some knowledge in several complex variables is helpful.

Concerning partial differential equations, not much is assumed.

The elliptic regularity of the Dirichlet problem for the Laplacian is quoted a few times, but the ellipticity results needed for elliptic regularization in the third chapter are proved from scratch.

Feb. 2010 214 pp. 7,850.  
9783037190760

**European Mathematical Society**

*RMS Lecture Notes Series in Mathematics,*

**Vol.10: Mitra, S. / Indranil Biswas, I. / Kulkarni, K. (eds.):  
"Teichmuller Theory and Moduli Problems",  
Proceedings of the Workshop held at HRI**

**Contents:** \*Members of the Advisory Board \*Introduction Indranil Biswas, Ravi S. Kulkarni, Sudeb Mitra \*Teichmuller Spaces as Complex Manifolds: Warwick 1992 Clifford J. Earle \*Moduli C. S. Seshadri \*On the Divergence of Certain Geodesic Rays in Teichmuller Space Abdelhadi Belkhirat \*On the Non-Quasi-Isometry of the Teichmuller Metric and Thurston's Weak Metric Abdelhadi Belkhirat \*Notes on Vector Bundles on Curves Usha N. Bhosle and Indranil Biswas \*Moduli Spaces of Connections on a Riemann Surface Indranil Biswas and Vicente Muñoz \*Teichmuller Geodesics, Delaunay Triangulations, and Veech Groups Joshua P. Bowman \*Introductory Bumponomics: The Topology of Deformation Spaces of Hyperbolic 3-Manifolds Richard P. Canary \*A Short Note on Nonemptiness of Parabolic Moduli Arijit Dey \*Limit Set of Quasiconformal Mapping Class Group on Asymptotic Teichmuller Space Ege Fujikawa etc.

Apr. 2010 640 pp. 438-095  
9789380416007 16,440.

**Ramanujan Mathematical Society**

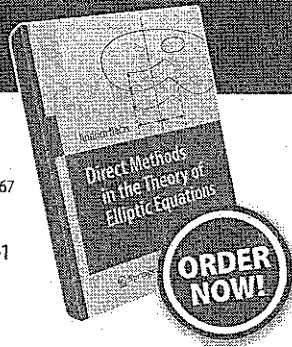
# Direct Methods in the Theory of Elliptic Equations

Jindrich Necas

Originally published in French  
"Les méthodes directes en théorie  
des équations elliptiques" by Academia,  
Praha, and Masson et Cie, Editeurs, Paris, 1967

1st Edition, 2010, 390 p.,  
Hardcover, ISBN: 978-3-642-10454-1

approx ► EUR 89,95



#### About this book :

Necas's famous book Direct methods in the theory of elliptic equations has become standard reference material on the mathematical theory of linear elliptic equations and systems, and also on the related function spaces framework. It provides a concise and self-contained introduction to the modern theory of partial differential equations, the theory of weak solutions and related topics. It is recommended to scientists working in the field of partial differential equations, postgraduate and graduate students, and applied mathematicians.

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