

Math Matiques Dunod

Exposmoderne des math. matiques. I. mentairesRecent Developments in Computational FinanceFoundations, Algorithms and ApplicationsWorld Scientific

The management of a water supply network can be substantially improved defining permanent sectors or districts that enhances simpler water loss detection and pressure management. However, the water network partitioning may compromise water system performance, since some pipes are usually closed to delimit districts in order not to have too many metering stations, to decrease costs and simplify water balance. This may reduce the reliability of the whole system and not guarantee the delivery of water at the different network nodes. In practical applications, the design of districts or sectors is generally based on empirical approaches or on limited field experiences. The book proposes a design support methodology, based on graph theory principles and tested on real case study. The described methodology can help water utilities, professionals and researchers to define the optimal districts or sectors of a water supply network.

These are the proceedings of the 22nd International Conference on Domain Decomposition Methods, which was held in Lugano, Switzerland. With 172 participants from over 24 countries, this conference continued a long-standing tradition of internationally oriented meetings on Domain Decomposition Methods. The book features a well-balanced mix of established and new topics, such as the manifold theory of Schwarz Methods, Isogeometric Analysis, Discontinuous Galerkin Methods, exploitation of modern HPC architectures and industrial applications. As the conference program reflects, the growing capabilities in terms of theory and available hardware allow increasingly complex non-linear and multi-physics simulations, confirming the tremendous potential and flexibility of the domain decomposition concept.

Beginning with 1953, entries for Motion pictures and filmstrips, Music and phonorecords form separate parts of the Library of Congress catalogue. Entries for Maps and atlases were issued separately 1953-1955.

Intended for mathematics librarians, the list allows librarians to ascertain if a seminaire has been published, which library has it, and the forms of entry under which it has been cataloged.

Zellig Harris had a profound influence in formal systems and applied mathematics, in demonstrations of the computability of language, and in informatics. Volume 2 begins with a commentary by André Lentin on Harris's grounding in constructivist, intuitionist mathematics, drawing a parallel between Harris's central insights and those of Gödel and others which were of like import in the foundations of mathematics. An international array of scholars describe further developments and relate this work to that of others. Fernando Pereira argues that Harrisian 'linguistic information' can effect a reunion of linguistics with information theory that has not been considered possible since Chomsky's declaration of irrelevance in 1957. Chapters by Richard Oehrle and by Terence Langendoen develop two novel formal systems with intriguing properties. Chapters by Naomi Sager and Ngo Thanh Nhan, by Aravind Joshi, and by Stephen Johnson describe the history of work on the computability of language and project exciting prospects ahead. Karel van den Eynde and colleagues describe use of distributional methods, refined beyond those of Harris, to develop comprehensive computer dictionaries for several languages. The chapter by Benoît Habert and Pierre Zweigenbaum surveys the field of automatic acquisition of information categories, and that by Richard Kittredge surveys work on text generation. Richard Smaby shows how distributional analysis can even inform design of computer user interfaces. Generality is a key value in scientific discourses and practices. Throughout history, it has received a variety of meanings and of uses. This collection of original essays aims to inquire into this diversity. Through case studies taken from the history of mathematics, physics and the life sciences, the book provides evidence of different ways of understanding the general in various contexts. It aims at showing how collectives have valued generality and how they have worked with specific types of "general" entities, procedures, and arguments. The books connects history and philosophy of mathematics and the sciences at the intersection of two of the most fruitful contemporary lines of research: historical epistemology, in which values (e.g. "objectivity," "accuracy") are studied from a historical viewpoint; and the philosophy of scientific practice, in which conceptual developments are seen as embedded in networks of social, instrumental, and textual practices. Each chapter provides a self-contained case-study, with a clear exposition of the scientific content at stake. The collection covers a wide range of scientific domains - with an emphasis on mathematics - and historical periods. It thus allows a comparative perspective which suggests a non-linear pattern for a history of generality. The introductory chapter spells out the key issues and points to the connections between the chapters.

In July 2004, a conference on graph theory was held in Paris in memory of Claude Berge, one of the pioneers of the field. The event brought together many prominent specialists on topics such as perfect graphs and matching theory, upon which Claude Berge's work has had a major impact. This volume includes contributions to these and other topics from many of the participants.

In the 20th century philosophy of mathematics has to a great extent been dominated by views developed during the so-called foundational crisis in the beginning of that century. These views have primarily focused on questions pertaining to the logical structure of mathematics and questions regarding the justification and consistency of mathematics. Paradigmatic in this respect is Hilbert's program which inherits from Frege and Russell the project to formalize all areas of ordinary mathematics and then adds the requirement of a proof, by epistemically privileged means (positivistic reasoning), of the consistency of such formalized theories. While interest in modified versions of the original foundational programs is still thriving, in the second part of the twentieth century several philosophers and historians of mathematics have questioned whether such foundational programs could exhaust the realm of important philosophical problems to be raised about the nature of mathematics. Some have done so in open confrontation (and hostility) to the logically based analysis of mathematics which characterized the classical foundational programs, while others (and many of the contributors to this book belong to this tradition) have only called for an extension of the range of questions and problems that should be raised in connection with an understanding of mathematics. The focus has turned thus to a consideration of what mathematicians are actually doing when they produce mathematics. Questions

concerning concept-formation, understanding, heuristics, changes in style of reasoning, the role of analogies and diagrams etc.

The book provides a unique collection of in-depth mathematical, statistical, and modeling methods and techniques for life sciences, as well as their applications in a number of areas within life sciences. It also includes a range of new ideas that represent emerging frontiers in life sciences where the application of such quantitative methods and techniques is becoming increasingly important. The book is aimed at researchers in academia, practitioners and graduate students who want to foster interdisciplinary collaborations required to meet the challenges at the interface of modern life sciences and mathematics.

Computational finance is an interdisciplinary field which joins financial mathematics, stochastics, numerics and scientific computing. Its task is to estimate as accurately and efficiently as possible the risks that financial instruments generate. This volume consists of a series of cutting-edge surveys of recent developments in the field written by leading international experts. These make the subject accessible to a wide readership in academia and financial businesses. The book consists of 13 chapters divided into 3 parts: foundations, algorithms and applications. Besides surveys of existing results, the book contains many new previously unpublished results.

The contact of one deformable body with another lies at the heart of almost every mechanical structure. Here, in a comprehensive treatment, two of the field's leading researchers present a systematic approach to contact problems. Using variational formulations, Kikuchi and Oden derive a multitude of new results, both for classical problems and for nonlinear problems involving large deflections and buckling of thin plates with unilateral supports, dry friction with nonclassical laws, large elastic and elastoplastic deformations with frictional contact, dynamic contacts with dynamic frictional effects, and rolling contacts. This method exposes properties of solutions obscured by classical methods, and it provides a basis for the development of powerful numerical schemes. Among the novel results presented here are algorithms for contact problems with nonlinear and nonlocal friction, and very effective algorithms for solving problems involving the large elastic deformation of hyperelastic bodies with general contact conditions. Includes detailed discussion of numerical methods for nonlinear materials with unilateral contact and friction, with examples of metalforming simulations. Also presents algorithms for the finite deformation rolling contact problem, along with a discussion of numerical examples.

Les Neuf chapitres, un ouvrage vieux de 2000 ans environ, furent considérés très tôt en Chine comme le " Classique " mathématique par excellence. Comme tout " Classique " chinois, l'ouvrage a suscité des commentaires. Deux d'entre eux se sont transmis au fil des siècles avec le texte même du canon : ils sont dus à Liu Hui (IIIe siècle) et à Li Chunfeng (VIIe siècle). Le lecteur occidental découvrira dans le présent volume l'ensemble tel que les lecteurs chinois ont pu le travailler. A la différence des classiques grecs, les connaissances que présentent Les Neuf chapitres - arithmétique des fractions, extraction de racines carrée et cubique, calcul de l'aire du cercle et du volume de la pyramide, pivot de Gauss, etc. - sont exposées sous forme d'algorithmes, ces procédures de calcul que le développement de l'informatique a remises au centre de l'intérêt des mathématiciens aujourd'hui. Méconnus en Occident, leurs commentaires contredisent l'opinion répandue selon laquelle l'idée et la pratique de la démonstration n'auraient fait l'objet d'élaborations qu'en Grèce ancienne. Ils traitent en effet systématiquement des raisons qui sous-tendent la correction d'algorithmes. Les Neuf chapitres, au fil des 246 problèmes empreints de poésie qui les structurent, tout en reflétant la vie de la Chine ancienne, invitent à reconsidérer l'origine de nos connaissances et de nos pratiques mathématiques. L'ouvrage compte une édition critique et une traduction abondamment annotées du texte, ainsi que le premier glossaire des termes mathématiques chinois anciens composé par Karine Chemla, avec des calligraphies originales de Toshiko Yasumoto. L'ensemble permet ainsi au lecteur une approche des concepts, des résultats et des pratiques propres à l'Antiquité chinoise, en les resituant dans leurs contextes sociaux et philosophiques.

The results presented in this book are a product of research conducted by the author independently and in collaboration with other researchers in the field. In this light, this work encompasses the most recent collection of various concepts of regularity and nonsmooth analysis into one monograph. The first part of the book attempts to present an accessible and thorough introduction to nonsmooth analysis theory. Main concepts and some useful results are stated and illustrated through examples and exercises. The second part gathers the most prominent and recent results of various regularity concepts of sets, functions, and set-valued mappings in nonsmooth analysis. The third and final section contains six different applications, with comments in relation to the existing literature.

Non-standard finite element methods, in particular mixed methods, are central to many applications. In this text the authors, Boffi, Brezzi and Fortin present a general framework, starting with a finite dimensional presentation, then moving on to formulation in Hilbert spaces and finally considering approximations, including stabilized methods and eigenvalue problems. This book also provides an introduction to standard finite element approximations, followed by the construction of elements for the approximation of mixed formulations in $H(\text{div})$ and $H(\text{curl})$. The general theory is applied to some classical examples: Dirichlet's problem, Stokes' problem, plate problems, elasticity and electromagnetism.

Jamais autant de données n'ont été disponibles ! Face à un tel flux, organiser et synthétiser les informations devient indispensable. En délivrant un message immédiat et visuel, les cartes conceptuelles sont un outil formidable pour le manager. Elles lui permettent de : • dynamiser et renforcer l'efficacité de son équipe ; • clarifier sa vision stratégique ; • organiser des réunions productives ; • favoriser la créativité et la réflexion individuelles comme collectives. Pourquoi ça marche ? Parce que les cartes conceptuelles s'approchent au plus près du fonctionnement du cerveau, les « noeuds » de la carte figurant les neurones qui se connectent entre eux. Ce livre très illustré vous guide pas à pas pour comprendre ce qu'est le concept mapping et réussir à créer vos propres cartes. Après la stratégie du Post-it (Kanban) et le mind mapping, le concept mapping est la

troisième étape du management visuel. Il améliorera tous les pans de votre travail : organisation, créativité, communication...

A novel, practical introduction to functional analysis In the twenty years since the first edition of Applied Functional Analysis was published, there has been an explosion in the number of books on functional analysis. Yet none of these offers the unique perspective of this new edition. Jean-Pierre Aubin updates his popular reference on functional analysis with new insights and recent discoveries—adding three new chapters on set-valued analysis and convex analysis, viability kernels and capture basins, and first-order partial differential equations. He presents, for the first time at an introductory level, the extension of differential calculus in the framework of both the theory of distributions and set-valued analysis, and discusses their application for studying boundary-value problems for elliptic and parabolic partial differential equations and for systems of first-order partial differential equations. To keep the presentation concise and accessible, Jean-Pierre Aubin introduces functional analysis through the simple Hilbertian structure. He seamlessly blends pure mathematics with applied areas that illustrate the theory, incorporating a broad range of examples from numerical analysis, systems theory, calculus of variations, control and optimization theory, convex and nonsmooth analysis, and more. Finally, a summary of the essential theorems as well as exercises reinforcing key concepts are provided. Applied Functional Analysis, Second Edition is an excellent and timely resource for both pure and applied mathematicians.

This Text Provides the essential mathematics needed to study computing. The authors are aware that many students do not have the same mathematical background common 5 years ago and this book has been written to accommodate these changes. Many exercises are provided with detailed answers and difficult concepts are thoroughly illustrated to help learning. Chapters are designed to be read in isolation with interdependence between chapters minimalised.

Une liste exhaustive des ouvrages disponibles publiés, en français, de par le monde.

The publication of the first book by Kenneth Arrow and Hervé Raynaud, in 1986, led to an important wave of research in the field of axiomatic approach applied to managerial logic. Managerial Logic summarizes the prospective results of this research and offers consultants, researchers, and decision makers a unified framework for handling the difficult decisions they face. Based on confirmed results of experimental psychology, this book places the problem in a phenomenological framework and shows how the influence of traditional methods has slowed the effective resolution of these problems. It provides a panorama of principal concepts and theorems demonstrated on axiomatized methods to guide readers in choosing the best alternatives and rejecting the worst ones. Finally, it describes the obtained extensions, often paradoxical, reached when these results are extended to classification problems. The objective of this book is also to allow the decision maker to find his way through the plethora of “multicriterion methods” promoted by council organizations. The meta-method it proposes will allow him to distinguish the wheat from the chaff. The collaboration with Kenneth Arrow comes essentially from the fact that his work influenced all subsequent works quoted in this book. His famous impossibility theorem, his gem of a PhD thesis, and his various other works resulted in him receiving the Nobel Prize for economy just before meeting Hervé Raynaud who was at that time a visiting professor at Berkeley University in California. Their mutual publications serve as the basis for the axiomatic approach in multicriterion decision-making.

This book focuses on some of the major developments in the history of contemporary (19th and 20th century) mathematics as seen in the broader context of the development of science and culture. Avoiding technicalities, it displays the breadth of contrasting images of mathematics favoured by different countries, schools and historical movements, showing how the conception and practice of mathematics changed over time depending on the cultural and national context. Thus it provides an original perspective for embracing the richness and variety inherent in the development of mathematics. Attention is paid to the interaction of mathematics with themes whose proper treatment have been neglected by the traditional historiography of the discipline, such as the relationship between mathematics, statistics and medicine.

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