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Encyclopedia of General Topology
Parallel Computing: Fundamentals, Applications and New Directions
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Partial Differential and Integral Equations Springer Nature

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Livres hebdo Elsevier

The conference Challenges In Scientific Computing (CISC 2002) took place from October, 2 to 5, 2002. The hosting institution was the Weierstrass Insti tute for Applied Analysis and Stochastics (WIAS) in Berlin, Germany. The main purpose of this meeting was to draw together researchers working in the fields of numerical analysis and scientific computing with a common interest in the numerical treatment and the computational solution of systems of nonlinear partial differential equations arising from applications of physical and engineering problems. The main focus of the conference was on the problem class of non linear transport/diffusion/reaction systems, chief amongst these being: the Navier-Stokes equations, semiconductor-device equations and porous media flow problems. The emphasis was on unsolved problems, challenging open questions from applications and assessing the various numerical methods used to handle them, rather than concentrate on accurate results from "solved" problems. Thanks to the participants it was an interesting meeting. The presentations stimulated exchanging ideas and lively discussions. This proceedings comprises 13 papers form the conference, ranging from numerical methods for flow problems, multigrid methods, semiconductor and microwave simulation, solution methods, finite element analysis to software aspects. This interesting conference would not have been possible without the help of the staff of the WIAS. I thank all participants, and all our supporters, especially those not onstage, for making the conference a success.

Multiscale, Nonlinear and Adaptive Approximation Springer Science & Business Media

This textbook presents the concepts and tools necessary to understand, build, and implement algorithms for computing elementary functions (e.g., logarithms, exponentials, and the trigonometric functions). Both hardware- and software-oriented algorithms are included, along with issues related to accurate floating-point implementation. This third edition has been updated and expanded to incorporate the most recent advances in the field, new elementary function algorithms, and function software. After a preliminary chapter that briefly introduces some fundamental concepts of computer arithmetic, such as floating-point arithmetic and redundant number systems, the text is divided into three main parts. Part I considers the

computation of elementary functions using algorithms based on polynomial or rational approximations and using table-based methods; the final chapter in this section deals with basic principles of multiple-precision arithmetic. Part II is devoted to a presentation of “shift-and-add” algorithms (hardware-oriented algorithms that use additions and shifts only). Issues related to accuracy, including range reduction, preservation of monotonicity, and correct rounding, as well as some examples of implementation are explored in Part III. Numerous examples of command lines and full programs are provided throughout for various software packages, including Maple, Sollya, and Gappa. New to this edition are an in-depth overview of the IEEE-754-2008 standard for floating-point arithmetic; a section on using double- and triple-word numbers; a presentation of new tools for designing accurate function software; and a section on the Toom-Cook family of multiplication algorithms. The techniques presented in this book will be of interest to implementers of elementary function libraries or circuits and programmers of numerical applications. Additionally, graduate and advanced undergraduate students, professionals, and researchers in scientific computing, numerical analysis, software engineering, and computer engineering will find this a useful reference and resource. PRAISE FOR PREVIOUS EDITIONS “[T]his book seems like an essential reference for the experts (which I'm not). More importantly, this is an interesting book for the curious (which I am). In this case, you'll probably learn many interesting things from this book. If you teach numerical analysis or approximation theory, then this book will give you some good examples to discuss in class." — MAA Reviews (Review of Second Edition) "The rich content of ideas sketched or presented in some detail in this book is supplemented by a list of over three hundred references, most of them of 1980 or more recent. The book also contains some relevant typical programs." — Zentralblatt MATH (Review of Second Edition) “I think that the book will be very valuable to students both in numerical analysis and in computer science. I found [it to be] well written and containing much interesting material, most of the time disseminated in specialized papers published in specialized journals difficult to find." — Numerical Algorithms (Review of First Edition)

Encyclopedia of General Topology

Springer Science & Business Media

A comprehensive and self-contained introduction to Gaussian processes, which provide a principled, practical, probabilistic approach to learning in kernel machines. Gaussian processes (GPs) provide a principled, practical, probabilistic approach to learning in kernel machines. GPs have received increased attention in the machine-learning community over the past decade, and this book provides a long-needed systematic and unified treatment of theoretical and practical aspects of GPs in machine learning. The treatment is comprehensive and self-contained, targeted at researchers and students in machine learning and applied statistics. The book deals with the supervised-learning problem for both regression and classification, and includes detailed algorithms. A wide variety of covariance (kernel) functions are presented and their properties discussed. Model selection is discussed both from a Bayesian and a classical

perspective. Many connections to other well-known techniques from machine learning and statistics are discussed, including support-vector machines, neural networks, splines, regularization networks, relevance vector machines and others. Theoretical issues including learning curves and the PAC-Bayesian framework are treated, and several approximation methods for learning with large datasets are discussed. The book contains illustrative examples and exercises, and code and datasets are available on the Web. Appendixes provide mathematical background and a discussion of Gaussian Markov processes.

Parallel Computing: Fundamentals, Applications and New Directions Springer Science & Business Media

Modern computing tools like Maple (symbolic computation) and Matlab (a numeric computation and visualization program) make it possible to easily solve realistic nontrivial problems in scientific computing. In education, traditionally, complicated problems were avoided, since the amount of work for obtaining the solutions was not feasible for the students. This situation has changed now, and the students can be taught real-life problems that they can actually solve using the new powerful software. The reader will improve his knowledge through learning by examples and he will learn how both systems, MATLAB and MAPLE, may be used to solve problems interactively in an elegant way. Readers will learn to solve similar problems by understanding and applying the techniques presented in the book. All programs used in the book are available to the reader in electronic form.

Extrapolation and Rational Approximation Cambridge University Press

This book gives background material on the theory of Laplace transforms, together with a fairly comprehensive list of methods that are available at the current time. Computer programs are included for those methods that perform consistently well on a wide range of Laplace transforms. Operational methods have been used for over a century to solve problems such as ordinary and partial differential equations.

Bibliographie nationale française Springer Science & Business Media

The Maple Summer Workshop and Symposium, MSWS '94, reflects the growing commu nity of Maple users around the world. This volume contains the contributed papers. A careful inspection of author affiliations will reveal that they come from North America, Europe, and Australia. In fact, fifteen come from the United States, two from Canada, one from Australia, and nine come from Europe. Of European papers, two are from Ger many, two are from the Netherlands, two are from Spain, and one each is from Switzerland, Denmark, and the United Kingdom. More important than the geographical diversity is the intellectual range of the contributions. We begin to see in this collection of works papers in which Maple is used in an increasingly flexible way. For example, there is an application in computer science that uses Maple as a tool to create a new utility. There is an application in abstract algebra where Maple has been used to create new functionalities for computing in a rational function field. There are applications to geometrical optics, digital signal processing, and experimental design.

Solving ODEs with MATLAB Springer Science & Business Media

Some extremum and unilateral boundary

value problems in viscous hydrodynamics.- On axisymmetric motion of the fluid with a free surface.- On the occurrence of singularities in axisymmetrical problems of hele-shaw type.- New asymptotic method for solving of mixed boundary value problems.- Some results on the thermistor problem.- New applications of energy methods to parabolic and elliptic free boundary problems.- A localized finite element method for nonlinear water wave problems.- Approximate method of investigation of normal oscillations of viscous incompressible liquid in container.- The classical Stefan problem as the limit case of the Stefan problem with a kinetic condition at the free boundary.- A mathematical model of oscillations energy dissipation of viscous liquid in a tank.- Existence of the classical solution of a two-phase multidimensional Stefan problem on any finite time interval.- Asymptotic theory of propagation of nonstationary surface and internal waves over uneven bottom.- Multiparametric problems of two-dimensional free boundary seepage.- Nonisothermal two-phase filtration in porous media.- Explicit solution of time-dependent free boundary problems.- Nonequilibrium phase transitions in frozen grounds.- System of variational inequalities arising in nonlinear diffusion with phase change.- Contact viscoelastoplastic problem for a beam.- Application of a finite-element method to two-dimensional contact problems.- Computations of a gas bubble motion in liquid.- Waves on the liquid-gas free surface in the presence of the acoustic field in gas.- Smooth bore in a two-layer fluid.- Numerical calculation of movable free and contact boundaries in problems of dynamic deformation of viscoelastic bodies.- On the canonical variables for two-dimensional vortex hydrodynamics of incompressible fluid.- About the method with regularization for solving the contact problem in elasticity.- Space evolution of tornado-like vortex core.- Optimal shape design for parabolic system and two-phase Stefan problem.- Incompressible fluid flows with free boundary and the methods for their research.- On the Stefan problems for the system of equations arising in the modelling of liquid-phase epitaxy processes.- Stefan problem with surface tension as a limit of the phase field model.- The modelization of transformation phase via the resolution of an inclusion problem with moving boundary.- To the problem of constructing weak solutions in dynamic elastoplasticity.- The justification of the conjugate conditions for the Euler's and Darcy's equations.- On an evolution problem of thermo-capillary convection.- Front tracking methods for one-dimensional moving boundary problems.- On Cauchy problem for long wave equations.- On fixed point (trial) methods for free boundary problems.- Nonlinear theory of dynamics of a viscous fluid with a free boundary in the process of a solid body wetting.

BIBLIOGRAPHIE DE LA FRANCE - LIVRES DU MOIS - JANVIER 1998.

Springer Science & Business Media

A volume devoted to the extremely clear and intrinsically beautiful theory of two-dimensional surfaces in Euclidean spaces. The main focus is on the connection between the theory of embedded surfaces and two-dimensional Riemannian geometry, and the influence of properties of intrinsic metrics on the geometry of surfaces.

Maple V: Mathematics and its Applications Springer Science & Business Media

The theory of linear damped oscillations was originally developed more than hundred years ago and is still of vital research interest to engineers, mathematicians and physicists alike. This theory plays a central role in explaining the stability of mechanical structures in civil engineering, but it also has applications in other fields such as electrical network systems and quantum mechanics. This volume gives an introduction to linear finite dimensional damped systems as they are viewed by an applied mathematician. After a short overview of the physical principles leading to the linear system model, a largely self-contained mathematical theory for this model is presented. This includes the geometry of the underlying indefinite metric space, spectral theory of J-symmetric matrices and the associated quadratic eigenvalue problem. Particular attention is paid to the sensitivity issues which influence numerical computations. Finally, several recent research developments are included, e.g. Lyapunov stability and the perturbation of the time evolution.

Les Livres disponibles Springer Science & Business Media

First published in 1202, Fibonacci's Liber Abaci was one of the most important books on mathematics in the Middle Ages, introducing Arabic numerals and methods throughout Europe. This is the first translation into a modern European language, of interest not only to historians of science but also to all mathematicians and mathematics teachers interested in the origins of their methods.

Solving Problems in Scientific Computing Using Maple and Matlab® Wiley-Interscience

What kinds of curriculum materials do mathematics teachers select and use, and how? This question is complex, in a period of deep evolutions of teaching resources, with the proficiency of online resources in particular. How do teachers learn from these materials, and in which ways do they 'tailor' them for their use and pupil learning? Teachers collect resources, select, transform, share, implement, and revise them. Drawing from the French term « ingénierie documentaire »,we call these processes « documentation ». The literal English translation is « to work with documents », but the meaning it carries is richer. Documentation refers to the complex and interactive ways that teachers work with resources; in-class and out-of-class, individually, but also collectively.

Un an de nouveautés Springer Science & Business Media

The growing demand of speed, accuracy, and reliability in scientific and engineering computing has been accelerating the merging of symbolic and numeric computations. These two types of computation coexist in mathematics yet are separated in traditional research of mathematical computation. This book presents 27 research articles on the integration and interaction of symbolic and numeric computation.

Elementary Functions Cambridge University Press

This IMA Volume in Mathematics and its Applications GRID GENERATION AND ADAPTIVE ALGORITHMS is based on the proceedings of a workshop with the same title. The work shop was an integral part of the 1996-97 IMA program on "MATHEMAT ICS IN HIGH-PERFORMANCE COMPUTING. " I would like to thank Marshall Bern (Xerox, Palo Alto Research Cen ter), Joseph E. Flaherty (Department of Computer Science, Rensselaer Polytechnic

Institute), and Mitchell Luskin (School of Mathematics, Uni versity of Minnesota), for their excellent work as organizers of the meeting and for editing the proceedings. I also take this opportunity to thank the National Science Founda tion (NSF), Department of Energy (DOE), and the Army Research Office (ARO), whose financial support made the workshop possible. Willard Miller, Jr. , Professor and Director v PREFACE Scientific and engineering computation has become so complex that traditional numerical computation on uniform meshes is generally not pos sible or too expensive. Mesh generation must reflect both the domain geometry and the expected solution characteristics. Meshes should, fur thermore, be related to the solution through computable estimates of dis cretization errors. This, suggests an automatic and adaptive process where an initial mesh is enriched with the goal of computing a solution with prescribed accuracy specifications in an optimal manner. While automatic mesh generation procedures and adaptive strategies are becoming available, major computational challenges remain. Three-dimensional mesh genera tion is still far from automatic.

From Text to 'Lived' Resources Springer Science & Business Media

Du culte dionysiaque de l antiquité aux formes les plus contemporaines, le théâtre a pris au fil des siècles des visages multiples.Écriture accomplie ou improvisation, spectacle initiatique ou pur divertissement, comédie ou tragédie, toutes les formes de jeu et de relation avec le spectateur continuent de cohabiter et traversent le temps.Ce livre examine toutes les composantes de l écriture et de la représentation théâtrale : typologie des oeuvres et des personnages, structure et temps de l'action, mais aussi statut du comédien, lieux de la représentation, techniques de la scénographie. Nous suivons dans leur complexité le travail des gens de théâtre, l'ambiguïté des relations qui se nouent entre la scène et le public.En fin d'ouvrage, un répertoire chronologique (oeuvres et auteurs), une bibliographie, un index des notions et un index des noms propres permettent une consultation aisée et un approfondissement de la lecture.

Symbolic-Numeric Computation CRC Press

This book is designed for the reader who wants to get a general view of the terminology of General Topology with minimal time and effort. The reader, whom we assume to have only a rudimentary knowledge of set theory, algebra and analysis, will be able to find what they want if they will properly use the index. However, this book contains very few proofs and the reader who wants to study more systematically will find sufficiently many references in the book. Key features: • More terms from General Topology than any other book ever published• Short and informative articles• Authors include the majority of top researchers in the field• Extensive indexing of terms

Bibliographie nationale francaise Springer Science & Business Media

A basic text for engineering students and practicing engineers dealing with design problems in all engineering disciplines. Optimization algorithms are developed through illustrative examples. Includes numerical results on the efficiencies of various algorithms, comparison of constrained-optimization methods, and strategies for optimization studies. Also includes several actual case studies.

Challenges in Scientific Computing -

CISC 2002 Springer
From 12 to 14 September 2002, the Academy of Humanities and Economics (AHE) hosted the workshop "Optimization and Inverse Problems in Electromagnetism". After this bi-annual event, a large number of papers were assembled and combined in this book. During the workshop recent developments and applications in optimization and inverse methodologies for electromagnetic fields were discussed. The contributions selected for the present volume cover a wide spectrum of inverse and optimal electromagnetic methodologies, ranging from theoretical to practical applications. A number of new optimal and inverse methodologies were proposed. There are contributions related to dedicated software. Optimization and Inverse Problems in Electromagnetism consists of three thematic chapters, covering: - General papers (survey of specific aspects of optimization and inverse problems in electromagnetism), - Methodologies, -Industrial Applications. The book can be useful to students of electrical and electronics engineering, computer science, applied mathematics (PhD level) and to researchers interested in the topic.
Geology and Resource Potential of the Congo Basin Springer Nature
This volume gives an overview of the state-of-the-art with respect to the development of all types of parallel computers and their application to a wide range of problem areas. The international conference on parallel computing ParCo97 (Parallel Computing 97) was held in Bonn, Germany from 19 to 22 September 1997. The first conference in this biannual series was held in 1983 in Berlin. Further conferences were held in Leiden (The Netherlands), London (UK), Grenoble (France) and Gent (Belgium). From the outset the aim with the ParCo (Parallel Computing) conferences was to promote the application of parallel computers to solve real life problems. In the case of ParCo97 a new milestone was reached in that more than half of the papers and posters presented were concerned with application aspects. This fact reflects the coming of age of parallel computing. Some 200 papers were submitted to the Program Committee by authors from all over the world. The final programme consisted of four invited papers, 71 contributed scientific/industrial papers and 45 posters. In addition a panel discussion on Parallel Computing and the Evolution of Cyberspace was held. During and after the conference all final contributions were refereed. Only those papers and posters accepted during this final screening process are included in this volume. The practical emphasis of the conference was accentuated by an industrial exhibition where companies demonstrated the newest developments in parallel processing equipment and software. Speakers from participating companies presented papers in industrial sessions in which new developments in parallel computing were reported.
Le théâtre Elsevier
This concise text, first published in 2003, is for a one-semester course for upper-level undergraduates and beginning graduate students in engineering, science, and mathematics, and can also serve as a quick reference for professionals. The major topics in ordinary differential equations, initial value problems, boundary value problems, and delay differential equations, are usually taught in three separate semester-long courses. This

single book provides a sound treatment of all three in fewer than 300 pages. Each chapter begins with a discussion of the 'facts of life' for the problem, mainly by means of examples. Numerical methods for the problem are then developed, but only those methods most widely used. The treatment of each method is brief and technical issues are minimized, but all the issues important in practice and for understanding the codes are discussed. The last part of each chapter is a tutorial that shows how to solve problems by means of small, but realistic, examples.