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and cryptography. Including updated topics for the new edition: the network flow algorithm, a breakthrough result in primality testing. The book contains solutions and hints for most problems.

Mécanique des solides, élasticité et plasticité

Alain MIRANVILLE, Roger TEMAM. — **Modélisation mathématique et mécanique des milieux continus.** — Scopos, vol. 18. — Un vol. broché, 15,5×23,5, de VIII, 280 p. — ISBN 3-540-44035-6. — Prix: €33.13. — Springer, Berlin, 2003.

Écrit dans un style qui convient aux mathématiciens et à leur formation, cette introduction à la mécanique des milieux continus et à la modélisation mathématique reste néanmoins proche de la physique. En particulier, les auteurs font une distinction claire entre ce qui est admis et ce qui est prouvé. Outre les fondements de la mécanique des milieux continus, cet ouvrage contient des introductions plus ou moins détaillées à diverses disciplines connexes: magnétohydrodynamique, combustion, dynamique des fluides géophysiques,... Les auteurs ont voulu éviter une approche trop abstraite des problèmes traités et garder un langage mathématique élémentaire (les pré-requis sont l'algèbre linéaire et le calcul différentiel et intégral connus de tout étudiant de licence ou de classes préparatoires et de tout ingénieur).

Optique, électromagnétique

Vladislav V. KRAVCHENKO. — **Applied quaternionic analysis.** — Research and exposition in mathematics, vol. 28. — Un vol. broché, 17×24, de 127 p. — ISBN 3-88538-228-8. — Prix: €24.00. — Heldermann Verlag, Darmstadt, 2003.

Quaternionic analysis is the most natural and close generalization of complex analysis that preserves many of its important features. The present book is meant as an introduction and invitation to this theory and its applications. Restricting ourselves to Maxwell's equations and the Dirac equation only we show the progress achieved in applied quaternionic analysis during the last five years, emphasising results which can not so easily be obtained by other methods. Thus, the main objective of this work is to introduce the reader to some topics of quaternionic analysis whose selection is motivated by particular models from the theory electromagnetic and spinor fields, and to show the usefulness and necessity of applying the tools of quaternionic analysis to these kinds of problems.

Economie, recherche opérationnelle, jeux

Marie BOISSONNADE, Daniel FREDON. — **Mathématiques financières.** — 2e édition. — Collection Express. — Un vol. broché, 15×21, de III, 155 p. — ISBN 2-10-006579-3. — Prix: € 12.00. — Dunod, Paris, distribué par Vivendi Universal Publishing Services, Fribourg, 2002.

Comment aller à l'essentiel, comprendre les méthodes et les démarches avant de les mettre en application? Conçue pour faciliter aussi bien l'apprentissage que la révision, la collection «Express» vous propose une présentation simple et concise des mathématiques financières en 22 fiches pédagogiques dont 8 études de cas. Chaque fiche comprend quatre rubriques: concepts généraux (les principes clés), l'essentiel à savoir (notions théoriques fondamentales), compléments (pour aller plus loin), applications (trois ou quatre exercices corrigés). – Sommaire: Notions de base. — Emprunts et investissements. — Études de cas.

J. Frédéric BONNANS, J. Charles GILBERT, Claude LEMARÉCHAL, Claudia A. SAGASTIZÁBAL. — **Numerical optimisation: theoretical and practical aspects.** — Universitex. — Un vol. broché, 15,5 × 23,5, de XIII, 419 p. — ISBN 3-540-00191-3. — Prix: €44.95. — Springer, Berlin, 2003.

Numerical optimisation has numerous applications in engineering sciences, operations research, economics, finance, etc. Starting with illustrations of this ubiquitous character, this book is essentially devoted to numerical algorithms for optimisation, which are exposed in a tutorial way. It covers fundamental algorithms (conjugate gradient, quasi-Newton, Newton, Gauss-Newton methods, sequential quadratic programming, line-search and trust-region techniques) as well as more specialized and advanced topics for unconstrained and constrained problems (non differentiable optimisation, interior-point methods for linear programming and linear monotone complementarity problems). The theoretical bases of the subject, such as optimality conditions, Lagrange multipliers or duality, although recalled, are assumed known. Most of the algorithms described in the book are explained in a detailed manner, allowing straightforward implementation. This level of detail is intended to familiarize the reader with some of the crucial questions of numerical optimisation: how algorithms operate, why they converge, difficulties that may be encountered and their possible remedies. Theoretical aspects of the approaches chosen (including their motivation, conditions for convergence, speed of convergence) are also addressed with care, often using minimal assumptions.

Richard J. NOWAKOWSKI, (Editor). — **More games of no chance.** — Mathematical Sciences Research Institute publications, vol. 42. — Un vol. relié, 16 × 24, de XII, 535 p. — ISBN 0-521-80832-4. — Prix: £40.00. — Cambridge University Press, Cambridge, 2003.

This book is a state-of-the-art look at combinatorial games, that is, games not involving chance or hidden information. It contains articles by some of the foremost researchers and pioneers of combinatorial game theory, such as Elwyn Berlekamp and John Conway, by other researchers in mathematics and computer science, and by top game players. The articles run the gamut from new theoretical approaches (infinite games, generalizations of game values, two-player cellular automata, alpha-beta pruning under partial orders) to the very latest in some of the hottest games (amazons, chomp, dot-and-boxes, go, chess, hex). Many of these advances reflect the interplay of the computer science and the mathematics. The book ends with an updated bibliography by A. Fraenkel and an updated version of the famous annotated list of combinatorial game theory problems by R. K. Guy, now in collaboration with R. J. Nowakowski.

Systèmes, contrôle optimal

Agamirza E. BASHIROV. — **Partially observable linear systems under dependent noises.** — Systems & control: foundations & applications. — Un vol. relié, 16 × 24, de XXVI, 334 p. — ISBN 3-7643-6999-X. — Prix: SFr. 138.00. — Birkhäuser, Basel, 2003.

This book discusses the methods of fighting against noise. It can be regarded as a mathematical view of specific engineering problems with known and new methods of control and estimation in noisy media. The main feature of this book is the investigation of stochastic optimalcontrol and estimation problems with the noise processes acting dependently on the state (or signal) and observation systems. The discussion is given for infinite dimensional systems, but within the linear quadratic framework for continuous and finite time horizon. In order to make this book self-contained, some background material is provided. The book may also be used as a reference manual in that part of functional analysis that is needed for problems of infinite dimensional linear systems theory.