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Bernard HÉRON, Françoise ISSARD-ROCH, Colette PICARD. — **Analyse numérique: exercices et problèmes corrigés.** — Sciences sup. — Un vol. broché, 17×24, de XII, 292 p. — ISBN 2-10-004372-2. — Prix: FF 175.00. — Dunod, Paris, 1999, diffusé en Suisse par Havas Services Suisse, Fribourg.

Ce recueil d'exercices et de problèmes d'analyse numérique s'adresse tout particulièrement aux étudiants de licence et de maîtrise de mathématiques, de mathématiques et ingénierie mathématique (MIM) et de mécanique et aux élèves-ingénieurs. Les énoncés, progressifs, sont répartis en cinq grands chapitres: Analyse matricielle; équations aux dérivées partielles elliptiques; optimisation; approximation d'équations aux dérivées partielles; méthodes numériques itératives. Les solutions, très détaillées et accompagnées de commentaires et de renvois bibliographiques, permettent une assimilation active des notions abordées.

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Jerry GLYNN, Theodore GRAY. — **The beginner's guide to *Mathematica*® Version 4.** — Un vol. relié, 20×23, de VIII, 434 p. — ISBN 0-521-77769-0. — Prix: £47.50. — Cambridge University Press, Cambridge, 2000.

This is a new edition of the book *The beginner's guide to Mathematica*. It teaches the basics of *Mathematica*'s powerful new Version 4, including chapters on its new high speed numerics, statistics and data analysis, and image processing. It also includes chapters on the interactive system for typesetting equations, on using style sheets, defining functions, creating graphs and notebooks, and on applying useful problem-solving techniques. Many concepts are illustrated with real life examples written in the authors' engaging dialog style.

George GRÄTZER. — **First steps in LATEX.** — Un vol. broché, 19×23,5, de XX, 131 p. — ISBN 0-8176-4132-7. — Prix: SFr. 36.00. — Birkhäuser, Boston, and Springer, New York, 1999.

This book is for the scientist, or technical typist who needs to learn quickly how to typeset articles containing mathematical formulas. This book will provide a quick introduction to LaTeX, including the American Mathematical Society's enhancements, so that your first article can be typeset in only a few hours. Key features include: simple and direct approach, "formula building blocks" to learn how to type math, a "formula gallery" to practise math formulas, samples to demonstrate the basic structure of LaTeX and AMS articles, useful appendices containing mathematical and text symbol tables, and a brief discussion of TeX, LaTeX, and the internet, a unique "Quick Finder" – supplementing a detailed table of contents and index – to look up common terms used in word processing and desktop publishing applications.

Arthur O. PITTENGER. — **An introduction to quantum computing algorithms.** — Progress in computer science and applied logic, vol. 19. — Un vol. relié, 16×24, de XII, 138 p. — ISBN 3-7643-4127-0. — Prix: SFr. 84.00. — Birkhäuser, Boston, 2000.

The purpose of this monograph is to provide the mathematically literate reader with an accessible introduction to the theory of quantum computing algorithms. The author briefly describes the historical context of quantum computing and provides the motivation, notation, and assumptions appropriate for quantum statistics, a non-dynamical, finite dimensional model of quantum mechanics. A discussion of the basic algorithms of Simon, Deutsch and Jozsa sets the stage for the presentation of Grover's search algorithm and Shor's factoring algorithm, key algorithms which crystallized interest in the practicality of quantum computers. The last part of

the book briefly elaborates the need for error-correction capabilities and then traces the theory of quantum error-correcting codes from the earliest examples to an abstract formulation in Hilbert space.

Raymond SÉROUL. — **Programming for mathematicians.** — Universitext. — Un vol. broché, 15,5×23,5, de XV, 429 p. — ISBN 3-540-66422-X. — Prix: DM 69.00. — Springer, Berlin, 2000.

The aim of this book is to teach mathematics students how to program using their knowledge of mathematics. For this they require only to know how to construct a proof. The entire book's emphasis is on "how to think" when programming. Three methods for constructing an algorithm or a program are used: a) manipulation and enrichment of existing code; b) use of recurrent sequences; c) deferral of code writing, in order to deal with one difficulty at a time. Many theorems are mathematically proved and programmed. The last chapter explains how a compiler works and shows how to compile "by hand" little (but not trivial - even recursive) programs. The book is intended for anyone who thinks mathematically and wants to program and play with mathematics.

Mécanique des solides, élasticité et plasticité

Gérard A. MAUGIN. — **Nonlinear waves in elastic crystals.** — Oxford science publications. — Oxford mathematical monographs. — Un vol. relié, 16×24, de IX, 314 p. — ISBN 0-19-853484-1. — Prix: £70.00. — Oxford University Press, Oxford, 1999.

From the preface: The precise project for this book took shape after the writing of the lecture notes for a course on the "Physical and mathematical models of nonlinear waves in solids" delivered in 1993 at the International Centre for Mechanical Sciences, Udine, Italy... It was neither to be a book on crystallography per se nor a treatise of mathematics. Rather, it was intended to be devoted to applied mathematics exploited in a specific physical field of basic interest to many scientists and engineers. — *Contents:* Different types of crystal. Discrete and continuum descriptions: general introduction. Elasticity and anelasticity: continuous viewpoint. Elasticity and anelasticity: discrete viewpoint. Coupled fields in elasticity. Nonlinear waves in elastic chains. Nonlinear waves in elastic crystals with a microstructure. Nonlinear waves in martensite structures. Nonlinear acoustic surface waves in crystals. Shock waves and phase-transition fronts in thermoelastic crystals.

Mécanique des fluides, acoustique

Albert GYR, Wolfgang KINZELBACH, Arkady TSINOBER, (Editors). — **Fundamental problematic issues in turbulence.** — Trends in mathematics. — Un vol. relié, 17,5×24, de VIII, 480 p. — ISBN 3-7643-6150-6. — Prix: SFr. 198.00. — Birkhäuser, Basel, 1999.

The intention of the book is to highlight the problematic aspects of turbulence. The contributions treat a variety of mathematical, physical and engineering subjects related to turbulence. The topics include mathematical issues, control and related problems, observational aspects, two- and quasi-two-dimensional flows, basic aspects of turbulence modeling, statistical issues and passive scalars. The main questions addressed are the controllability of turbulent flows, possible qualitative differences between pure two-dimensional and real quasi-two-dimensional turbulent flows, common features of two-dimensional and three-dimensional turbulence, etc.