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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, $15,5 \times 23,5$, 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, $17,5 \times 24$, 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.