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program... has built-in automatic proving facilities... allows simultaneous manipulation and construction in different views... has “native support” for non-euclidean geometries... has advanced facilities for geometric loci... is “internet-aware” (written in Java)... produces high-quality printouts... is based on mathematical logic.

Mécanique des particules et systèmes

Nicola BELLOMO, Luigi PREZIOSI, Antonio ROMANO. — **Mechanics and dynamical systems with *Mathematica*[®]**. — Modeling and simulation in science, engineering and technology. — Un vol. relié, 16 × 24, de XIII, 417 p. — ISBN 0-8176-4007-X. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2000.

This book provides a systematic and unified treatment of mechanics and dynamical systems, addressing modeling, qualitative analysis, and simulations of physical systems using ordinary differential equations. The scientific computational components are presented using the software program *Mathematica*, both in worked examples and in the end-of-chapter problems. Special attention is given to classical mechanics models in light of new computational methods and concepts from dynamical systems. The book’s nine chapters are organized into three unified parts: mathematical methods for differential equations; methods of classical mechanics; and dynamics, stochastic models, and discretization of continuous models.

Mécanique des solides, élasticité et plasticité

Teodor M. ATANACKOVIC, Ardéshir GURAN. — **Theory of elasticity for scientists and engineers**. — Un vol. relié, 16 × 24, de XII, 374 p. — ISBN 3-8176-4072-X. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2000.

This new book treats classical elasticity theory from a modern point of view. It is intended as a general introduction to the various branches of elasticity theory and its applications. In the first part of the book, the theory of stress and strain is treated in a standard way. The important feature here is that the nonlinear stress tensor is the basis from which the linearized version is obtained. Next, the standard derivation of the Hooke’s law for isotropic elastic and the Duhamel-Neumann law for thermoelastic body is presented. After that various generalizations of the Hooke’s law for one-dimensional case are given. The three-dimensional generalizations of the Hooke’s law are also discussed and the influence of geometric non-linearity on finite deformations in a linear state of stress is examined. The book contains solutions to numerous problems in two and three dimensions.

Mécanique des fluides, acoustique

Carlo CERCIGNANI. — **Rarefied gas dynamics: from basic concepts to actual calculations**. — Cambridge texts in applied mathematics. — Un vol. broché, 15 × 23, de XVIII, 320 p. — ISBN 0-521-65992-2. — Prix: £18.95 (relié: £50.00). — Cambridge University Press, Cambridge, 2000.

The aim of this book is to present the concepts, methods, and applications of kinetic theory to rarefied gas dynamics. After introducing the basic tools, problems in plane geometry are treated using approximation techniques (perturbation and numerical methods). These same techniques are later used to deal with two- and three-dimensional problems. The models include not only monatomic but also polyatomic gases, mixtures, and chemical reactions. A special chapter is devoted to evaporation and condensation phenomena.