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Nota di contenuto	Preface -- 1: Introduction -- 2: Geometry and Kinematics of Deformation -- 3: Mechanics of Stresses -- 4: Mathematical Models in Mechanics of Deformable Solids -- 5: General Equations of the Theory of Elasticity. Formulation of Problems -- 6: Principles and General Theorems of the Theory of Elasticity. Computation Methods -- 7: Introduction to the Theory of Cosserat type Bodies -- 8: Theory of Concentrated Loads -- 9: Elastic Space. Elastic Half-space -- 10: Elastic Eights-space. Elastic Quarter-space -- 11: Elastic Parallelepiped. Elastic Strip. Elastic Layer. Thick Plate -- 12: Dynamical Problems of Elastic Bodies -- 13: Particular Cases of States of Strain and Stress -- 14: Anisotropic and Non-homogeneous Bodies -- 15: Introduction to Thermoelasticity -- 16: Introduction to Linear Viscoelasticity -- A: Appendix -- 1: Elements of Tensor Calculus -- 2:

Curvilinear Coordinates -- 3: Elements of the Theory of Distributions -- 4: Notations and Integrals -- Subject Index -- Name Index.

Sommario/riassunto

Deformable solids have a particularly complex character; mathematical modeling is not always simple and often leads to inextricable difficulties of computation. One of the simplest mathematical models and, at the same time, the most used model, is that of the elastic body – especially the linear one. But, notwithstanding its simplicity, even this model of a real body may lead to great difficulties of computation. The practical importance of a work about the theory of elasticity, which is also an introduction to the mechanics of deformable solids, consists of the use of scientific methods of computation in a domain in which simplified methods are still used. This treatise takes into account the consideration made above, with special attention to the theoretical study of the state of strain and stress of a deformable solid. The book draws on the known specialized literature, as well as the original results of the author and his 50+ years experience as Professor of Mechanics and Elasticity at the University of Bucharest. The construction of mathematical models is made by treating geometry and kinematics of deformation, mechanics of stresses and constitutive laws. Elastic, plastic and viscous properties are thus put in evidence and the corresponding theories are developed. Space problems are treated and various particular cases are taken into consideration. New solutions for boundary value problems of finite and infinite domains are given and a general theory of concentrated loads is built. Anisotropic and non-homogeneous bodies are studied as well. Cosserat type bodies are also modeled. The connection with thermal and viscous phenomena will be considered too. Audience: researchers in applied mathematics, mechanical and civil engineering.