Wave Motion In Elastic Solids Karl F Graff

Ultrasonic SpectroscopyIntroduction to Elastic Wave PropagationWave Propagation in Elastic SolidsAcoustic EmissionWave Motion in Elastic SolidsMechanics of Continua and Wave DynamicsUltrasonic Waves in Solid MediaMechanics Of Elastic SolidsOscillations and WavesLinear and Non-Linear Deformations of Elastic SolidsMathematics of Wave PropagationWaves in Nonlinear Pre-Stressed MaterialsElastic Waves in the EarthReciprocity in ElastodynamicsNonlinear Waves in SolidsWave Motion in Elastic SolidsStress Waves in Anelastic SolidsWave Motion in Elastic SolidsStress Waves in Non-Elastic SolidsWave Motion in Elastic SolidsElastic wave propagation in transversely isotropic mediaClassics of Elastic Wave TheoryWave Propagation in Electromagnetic MediaWaves And Rays In Elastic Continua (Fourth Edition)Ultrasound and Elastic WavesWave Motion in Elastic SolidsWave MotionImpact: the Theory and Physical Behaviour of Colliding SolidsWave Propagation in Materials and StructuresRay Methods for Waves in Elastic SolidsElastic Waves in Anisotropic LaminatesQuestions About Elastic WavesWaves And Rays In Seismology: Answers To Unasked Questions (Third Edition)Physics of WavesWave MotionLamb-Wave Based Structural Health Monitoring in Polymer CompositesInhomogeneous Waves in Solids and FluidsWave Propagation in Layered Anisotropic MediaWave Propagation in Elastic SolidsStress Waves in Solids

Ultrasonic Spectroscopy

Introduction to Elastic Wave Propagation

Wave Propagation in Elastic Solids

Although the subject of wave propagation in solids has a long history, the classical theory of elastic waves having been developed in the nine teenth century by STOKES, POISSON, RAYLEIGH and KELVIN, the last two decades have seen a remarkable revival of interest in this subject among both theoreticians and experimenters. There' are a number of reasons for this; first, experimental methods for the generation and detection of high frequency mechanical waves have become available only with the advent of electronic techniques and of high speed photo graphic recording apparatus. Secondly, the appearan

Acoustic Emission

Wave Motion in Elastic Solids

Earthquakes, a plucked string, ocean waves crashing on the beach, the sound waves that allow us to recognize known voices. Waves are everywhere, and the propagation and classical properties of these apparently disparate phenomena can be described by the same mathematical methods: variational calculus, characteristics theory, and caustics. Taking a medium-by-medium approach, Julian Davis explains the mathematics needed to understand wave propagation in inviscid and viscous fluids, elastic solids, viscoelastic solids, and thermoelastic media, including hyperbolic partial differential equations and characteristics theory, which makes possible geometric solutions to nonlinear wave problems. The result is a clear and unified treatment of wave propagation that makes a diverse body of mathematics accessible to engineers, physicists, and applied mathematicians engaged in research on elasticity, aerodynamics, and fluid mechanics. This book will particularly appeal to those working across specializations and those who seek the truly interdisciplinary understanding necessary to fully grasp waves and their behavior. By proceeding from concrete phenomena (e.g., the Doppler effect, the motion of sinusoidal waves, energy dissipation in viscous fluids, thermal stress) rather than abstract mathematical principles, Davis also creates a one-stop reference that will be prized by students of continuum mechanics and by mathematicians needing information on the physics of waves.

Mechanics of Continua and Wave Dynamics

Explains the physical principles of wave propagation and relates them to ultrasonic wave mechanics and the more recent guided wave techniques that are used to inspect and evaluate aircraft, power plants, and pipelines in chemical processing. An invaluable reference to this active field for graduate students, researchers, and practising engineers.

Ultrasonic Waves in Solid Media

Ultrasound has found an increasing number of applications in recent years due to greatly increased computing power. Ultrasound devices are often preferred over other devices because of their lower cost, portability, and non-invasive nature. Patients using ultrasound can avoid the dangers of radiological imaging devices such as x-rays, CT scans, and radioactive media injections. Ultrasound is also a preferred and practical method of detecting material fatique and defects in metals, composites, semiconductors, wood, etc. Detailed appendices contain useful formulas and their derivations, technical details of relevant theories The FAQ format is used where a concept in one answer leads to a new Q

Mechanics Of Elastic Solids

The most readable survey of the theoretical core of current knowledge available. The author gives a concise account of the classical theory necessary to an understanding of the subject and considers how this theory has been extended to solids.

Oscillations and Waves

Textbook on wave phenomena for advanced undergraduate courses; worked examples, exercises and solutions for teachers.

Linear and Non-Linear Deformations of Elastic Solids

This is a book on seismology dealing with advanced aspects of wave propagation in complex media. It can also be viewed as a book on mathematical modelling, wherein the accuracy of describing seismic phenomena exemplifies the modelling itself. The book gives an insight into the power of abstractness by applying the same mathematical methods and strategies to solve a variety of different physical problems. This book covers a broad range of topics in an advanced yet accessible manner. Each chapter is accompanied by a number of solved exercises, which render the book convenient for a lecturer and facilitate its use for an independent study. The details of mathematical methods are discussed in the appendices, which form a substantial portion of the book.

Mathematics of Wave Propagation

Wave Propagation in Elastic Solids focuses on linearized theory and perfectly elastic media. This book discusses the one-dimensional motion of an elastic continuum; linearized theory of elasticity; elastodynamic theory; and elastic waves in an unbounded medium. The plane harmonic waves in elastic half-spaces; harmonic waves in waveguides;

and forced motions of a half-space are also elaborated. This text likewise covers the transient waves in layers and rods; diffraction of waves by a slit; and thermal and viscoelastic effects, and effects of anisotropy and nonlinearity. Other topics include the summary of equations in rectangular coordinates, time-harmonic plane waves, approximate theories for rods, and transient in-plane motion of a layer. This publication is a good source for students and researchers conducting work on the wave propagation in elastic solids.

Waves in Nonlinear Pre-Stressed Materials

This book examines the issues across the breadth of elasticity theory. Firstly, the underpinning mathematics of vectors and matrices is covered. Thereafter, the equivalence between the inidicial, symbolic and matrix notations used for tensors is illustrated in the preparation for specific types of material behaviour to be expressed, usually as a response function from which a constitutive stress-strain relation follow.Mechanics of Elastic Solids shows that the elastic response of solid materials has many forms. Metals and their alloys confirm dutifully to Hooke's law. Non-metals do not when the law connecting stress to strain is expressed in polynomial, exponential and various empirical, material specific forms. Hyper- and hypo- elasticity theories differ in that the former is restricted to its thermodynamic basis while the latter pervades many an observed response with its release from thermal restriction, but only at the risk of contravening the laws of thermodynamics.This unique compendium is suitable for a degree or diploma course in engineering and applied mathematics, as well as postgraduate and professional researchers.

Elastic Waves in the Earth

Seismology, as a branch of mathematical physics, is an active subject of both research and development. Its reliance on computational and technological advances continuously motivates the developments of its underlying theory. The fourth edition of Waves and Rays in Elastic Continua responds to these needs.The book is both a research reference and a textbook. Its careful and explanatory style, which includes numerous exercises with detailed solutions, makes it an excellent textbook for the senior undergraduate and graduate courses, as well as for an independent study. Used in its entirety, the book could serve as a sole textbook for a year-long course in quantitative seismology. Its parts, however, are designed to be used independently for shorter courses with different emphases. The book is not limited to quantitive seismology; it can serve as a textbook for courses in mathematical physics or applied mathematics.

Reciprocity in Elastodynamics

Ultrasonic non-destructive evaluation (NDE) plays an increasingly important role in determining properties and detecting defects in composite materials, and the analysis of wave behavior is crucial to effectively using NDE techniques. The complexity of elastic wave propagation in anisotropic media has led to a reliance on numerical methods of analysis-methods that are often quite time-consuming and whose results yield even further difficulties in extracting explicit phenomena and characteristics. Innovative and insightful, Elastic Waves in Anisotropic Laminates establishes a set of high-performance, analytical-numerical methods for elastic wave analysis of anisotropic layered structures. The treatment furnishes a comprehensive introduction, sound theoretical development, and applications to smart materials, plates, and shells. The techniques, detailed in both the time and frequency domains, include methods that combine the finite element method (FEM) with the Fourier transform approach and the strip element method (SEM). These -methods can also be used for expediently finding the Green's function for anisotropic laminates useful for inverse problems related to wave propagation, and methods for inverse analyses, including conjugate gradient methods, and genetic algorithms are also introduced. The text is complemented by many examples generated using software codes based on the techniques developed. Filled with charts and illustrations, Elastic Waves in Anisotropic Laminates is accessible even to readers from non-engineering backgrounds and offers a unique opportunity to discover methods that can lead to an understanding of the dynamic characteristics and wave motion behaviors of advanced composite materials.

Nonlinear Waves in Solids

Papers in this book provide a state-of-the-art examination of waves in pre-stressed materials. You'll gain new perspectives via a multi-disciplinary approach that interweaves key topics. These topics include the mathematical modeling of incremental material response (elastic and inelastic), an analysis of the governing differential equations, and boundary-value problems. Detailed illustrations help you visualize key concepts and processes.

Wave Motion in Elastic Solids

Stress Waves in Non-Elastic Solids is a comprehensive presentation of the principles underlying the propagation of stress waves in non-elastic solids, with emphasis on wave problems in the theory of plasticity. This book exposes wave propagation problems for a range of material responses and justifies the hypotheses introduced in specialized theories and the simplifications made in the analysis of particular problems. Both analytical and numerical methods of solving problems are described, and a large number of solutions to specific problems of wave propagation in inelastic solids are given. This book is comprised of six chapters and begins with an overview of the fundamental equations of the dynamics of inelastic media. The dynamical properties of metals and soils are discussed, offering an account of the most representative theories of plasticity and viscoplasticity. The next chapter considers the basic definitions of discontinuity surfaces and the conditions that must to be satisfied across these surfaces. Certain mathematical fundamentals are given, referring to systems of differential equations, quasi-linear and semi-linear, of the first order. Initial and boundary value problems for hyperbolic equations are also formulated. The remaining chapters focus on methods of solving stress wave propagation problems, including one-dimensional plane waves and longitudinal-transverse waves. Wave propagation problems for elastic-plastic and elastic/viscoplastic media are treated in detail, along with the most important problem of shock waves in metals and soils. The last chapter deals with thermal wave propagation problems. This monograph will be a valuable resource for students and practitioners of engineering, physics, and mathematics.

Stress Waves in Anelastic Solids

In this monograph I record those parts of the theory of transverse isotropic elastic wave propagation which lend themselves to an exact treatment, within the framework of linear theory. Emphasis is placed on transient wave motion problems in two- and three-dimensional unbounded and semibounded solids for which explicit results can be obtained, without resort to approximate methods of integration. The mathematical techniques used, many of which appear here in book form for the first time, will be of interest to applied mathematicians, engeneers and scientists whose specialty includes crystal acoustics, crystal optics, magnetogasdynamics, dislocation theory, seismology and fibre wound composites. My interest in the subject of anisotropic wave motion had its origin in the study of small deformations superposed on large deformations of elastic solids. By varying the initial stretch in a homogeneously deformed solid, it is possible to synthesize aniso tropic materials whose elastic parameters vary continuously. The range of the parameter variation is limited by stability considerations in the case of small deformations super posed on large deformation problems and (what is essentially the same thing) by the of hyperbolicity (solids whose parameters allow wave motion) for anisotropic notion solids. The full implication of hyperbolicity for anisotropic elastic solids has never been previously examined, and even now the constraints which it imposes on the elasticity constants have only been examined for the class of transversely isotropic (hexagonal crystals) materials.

Wave Motion in Elastic Solids

Ultrasonic spectroscopy is a technique widely used in solid-state physics, materials science and geology which utilises acoustic waves to determine fundamental material properties of objects, such as their elasticity and mechanical energy dissipation. This book provides complete coverage of the main issues relevant to the design, analysis and interpretation of ultrasonic experiments. Topics including elasticity, acoustic waves in solids, ultrasonic loss and the relation of elastic constants to thermodynamic potentials are covered in depth. Modern techniques and experimental methods including resonant ultrasound spectroscopy, digital pulse-echo and picosecond ultrasound are also introduced and reviewed. Also containing extensive background theory, this self-contained book is accessible to students new to the field of ultrasonic spectroscopy, as well as to graduate students and researchers in physics, engineering, materials science and geophysics.

Stress Waves in Non-Elastic Solids

Self-contained coverage of topics ranging from elementary theory of waves and vibrations in strings to three-dimensional theory of waves in thick plates. Over 100 problems.

Wave Motion in Elastic Solids

The propagation of mechanical disturbances in solids is of interest in many branches of the physical scienses and engineering. This book aims to present an account of the theory of wave propagation in elastic solids. The material is arranged to present an exposition of the basic concepts of mechanical wave propagation within a one-dimensional setting and a discussion of formal aspects of elastodynamic theory in three dimensions, followed by chapters expounding on typical wave propagation phenomena, such as radiation, reflection, refraction, propagation in waveguides, and diffraction. The treatment necessarily involves considerable mathematical analysis. The pertinent mathematical techniques are, however, discussed at some length.

Elastic wave propagation in transversely isotropic media

Ideal as a classroom text or for individual study, this unique one-volume overview of classical wave theory covers wave phenomena of acoustics, optics, electromagnetic radiations, and more.

Classics of Elastic Wave Theory

Elastic Waves in the Earth provides information on the relationship between seismology and geophysics and their general aspects. The book offers elastodynamic equations and derivative equations that can be used in the propagation of elastic waves. It also covers major topics in detail, such as the fundamentals of elastodynamics; the Lamb's problem, which includes the Cagniard-de Hoop theory; rays and modes in a radially inhomogeneous earth and in multilayered media, which includes the Thomson-Haskell theory; the elastic wave dissipation; the seismic source and noise; and the seismographs. The book consists of 33 chapters. The first 16 chapters include basic material related to the propagation of elastic waves. Topics covered by these chapters include scalars, vectors, and tensors in cartesian coordinates, stress and strain analysis, equations of elasticity and motion, plane waves, Rayleigh waves, plane-wave theory, and fluid-fluid and solid-solid interfaces. The second half of the book covers various ray and mode theories, elastic wave dissipation, and the observations and theories of seismic source and seismic noise. It concludes by discussing earthquake seismology and different seismographs, like the pendulum seismometer and the strain seismometer.

Wave Propagation in Electromagnetic Media

This volume contains 16 classic essays from the 17th to the 21st centuries on aspects of elastic wave theory.

Waves And Rays In Elastic Continua (Fourth Edition)

Recent advances in the study of the dynamic behavior of layered materials in general, and laminated fibrous composites in particular, are presented in this book. The need to understand the microstructural behavior of such classes of materials has brought a new challenge to existing analytical tools. This book explores the fundamental question of how mechanical waves propagate and interact with layered anisotropic media. The chapters are organized in a logical sequence depending upon the complexity of the physical model and its mathematical treatment.

Ultrasound and Elastic Waves

This monograph analyses in detail the physical aspects of the elastic waves radiation during deformation or fracture of materials. It presents the methodological bases for the practical use of acoustic emission device, and describes the results of theoretical and experimental researches of evaluation of the crack growth resistance of materials, selection of the useful AE signals. The efficiency of this methodology is shown through the diagnostics of various-purpose industrial objects. The authors obtain results of experimental researches with the help of the new methods and facilities.

Wave Motion in Elastic Solids

The book focuses especially on the application of SHM technology to thin walled structural systems made from carbon fiber reinforced plastics. Here, guided elastic waves (Lamb-waves) show an excellent sensitivity to structural damages so that they are in the center of this book. It is divided into 4 sections dealing with analytical, numerical and experimental fundamentals, and subsequently with Lamb-wave propagation in fiber reinforced composites, SHM-systems and signal processing. The book is designed for engineering students as well as for researchers in the field of structural health monitoring and for users of this technology.

Wave Motion

This is the second work of a set of two volumes on the phenomena of wave propagation in nonreacting and reacting media. The first, entitled Wave Propagation in Solids and Fluids (published by Springer-Verlag in 1988), deals with wave phenomena in nonreacting media (solids and fluids). This book is concerned with wave propagation in reacting media-specifically, in electro magnetic materials. Since these volumes were designed to be relatively self contained, we have taken the liberty of adapting some of the pertinent material, especially in the theory of hyperbolic partial differential equations (concerned with electromagnetic wave propagation), variational methods, and Hamilton-Jacobi theory, to the phenomena of electromagnetic waves. The purpose of this volume is similar to that of the first, except that here we are dealing with electromagnetic waves. We attempt to present a clear and systematic account of the mathematical methods of wave phenomena in electromagnetic materials that will be readily accessible to physicists and engineers. The emphasis is on developing the necessary mathematical tech niques, and on showing how these methods of mathematical physics can be effective in unifying the physics of wave propagation in electromagnetic media. Chapter 1 presents the theory of time-varying electromagnetic fields, which involves a discussion of Faraday's laws, Maxwell's equations, and their appli cations to electromagnetic wave propagation under a variety of conditions.

Impact: the Theory and Physical Behaviour of Colliding Solids

Emphasizing physics over mathematics, this popular, classroom-tested text helps advanced undergraduates acquire a sound physical understanding of wave phenomena. This second edition of Oscillations and Waves: An Introduction contains new widgets, animations in Python, and exercises, as well as updated chapter content throughout; continuing to ease the difficult transition for students between lower-division courses that mostly encompass algebraic equations and upper-division courses that rely on differential equations. Assuming familiarity with the laws of physics and college-level mathematics, the author covers aspects of optics that crucially depend on the wave-like nature of light, such as wave optics. Examples explore discrete mechanical, optical, and quantum mechanical systems; continuous gases, fluids, and elastic solids; electronic circuits; and electromagnetic waves. The text also introduces the conventional complex representation of oscillations and waves during the discussion of quantum mechanical waves. Features: Fully updated throughout and featuring new widgets, animations, and end of chapter exercises to enhance understanding Provides a clear, concise, systematic, and comprehensive treatment of the subject matter that emphasises physics over mathematics Offers complete coverage of advanced topics in waves, such as electromagnetic wave propagation through the ionosphere Includes examples from mechanical systems, elastic solids, electronic circuits, optical systems, and other areas

Wave Propagation in Materials and Structures

Waves are a ubiquitous and important feature of the physical world, and throughout history it has been a major challenge to understand them. They can propagate on the surfaces of solids and of fluids;

chemical waves control the beating of your heart; traffic jams move in waves down lanes crowded with vehicles. This introduction to the mathematics of wave phenomena is aimed at advanced undergraduate courses on waves for mathematicians, physicists or engineers. Some more advanced material on both linear and nonlinear waves is also included, thus making the book suitable for beginning graduate courses. The authors assume some familiarity with partial differential equations, integral transforms and asymptotic expansions as well as an acquaintance with fluid mechanics, elasticity and electromagnetism. The context and physics that underlie the mathematics is clearly explained at the beginning of each chapter. Worked examples and exercises are supplied throughout, with solutions available to teachers.

Ray Methods for Waves in Elastic Solids

The book may be viewed as an introduction to time-harmonic waves in dissipative bodies, notably viscoelastic solids and fluids. The inhomogeneity of the waves, which is due to the fact that planes of constant phase are not parallel to planes of constant amplitude, is shown to be strictly related to the dissipativity of the medium. A preliminary analysis is performed on the propagation of inhomogeneous waves in unbounded media and of reflection and refraction at plane interfaces. Then emphasis is given to those features that are of significance for applications. In essence, they regard surface waves, scattering by (curved) obstacles, wave propagation in layered heterogeneous media, and ray methods. The pertinent mathematical techniques are discussed so as to make the book reasonably self-contained.

Elastic Waves in Anisotropic Laminates

The reciprocity theorem has been used for over 100 years to establish interesting and useful relations between different loading states of a body. This book discusses current and novel uses of reciprocity relations for the determination of elastodynamic fields. The author, who is internationally distinguished for his contributions to theoretical and applied mechanics, presents a novel method to solve for wave fields, shedding new light on the use of reciprocity relations for dynamic fields in an elastic body. The material presented in the book is relevant to several fields in engineering and applied physics. Examples are ultrasonics for medical imaging and non-destructive evaluation, acoustic microscopy, seismology, exploratory geophysics, structural acoustics, and the response of structures to high-rate loads and the determination of material properties by ultrasonic techniques.

Questions About Elastic Waves

This book addresses the modelling of mechanical waves by asking the right questions about them and trying to find suitable answers. The questions follow the analytical sequence from elementary understandings to complicated cases, following a step-by-step path towards increased knowledge. The focus is on waves in elastic solids, although some examples also concern non-conservative cases for the sake of completeness. Special attention is paid to the understanding of the influence of microstructure, nonlinearity and internal variables in continua. With the help of many mathematical models for describing waves, physical phenomena concerning wave dispersion, nonlinear effects, emergence of solitary waves, scales and hierarchies of waves as well as the governing physical parameters are analysed. Also, the energy balance in waves and non-conservative models with energy influx are discussed. Finally, all answers are interwoven into the canvas of complexity.

Waves And Rays In Seismology: Answers To Unasked Questions (Third Edition)

Earthquakes are detected and studied by measuring the waves they create. Waves are transmitted through the Earth to detect oil and gas deposits and to study the Earth?s geological structure. Properties of materials are determined by measuring the behaviour of waves transmitted through them. In recent years, elastic waves transmitted through the human body have been used for medical diagnosis and therapy. Many students and professionals in various branches of engineering encounter problems requiring an understanding of elastic waves. In this book, they will find the basic concepts and methods of the theory of wave propagation in elastic materials. One-dimensional waves, transient waves and harmonic waves including reflections of plane waves at interfaces. Rayleigh waves, waves in elastic layers and in layered materials are discussed. Analytical methods in nonlinear wave propagation are presented. This book includes exercises with solutions and many explanatory figures.

Physics of Waves

Linear and Non-Linear Deformations of Elastic Solids aims to compile the advances in the field of linear and non-linear elasticity through discussion of advanced topics. Broadly classified into two parts, it includes crack, contact, scattering and wave propagation in linear elastic solids and bending vibration, stability in non-linear elastic solids supported by MATLAB examples. This book is aimed at graduate students and researchers in applied mathematics, solid mechanics, applied mechanics, structural mechanics and includes comprehensive discussion of related analytical/numerical methods.

Wave Motion

Mechanics of Continua and Wave Dynamics is a textbook for a course on the mechanics of solids and fluids with the emphasis on wave theory. The material is presented with simplicity and clarity but also with mathematical rigor. Many wave phenomena, especially those of geophysical nature (different types of waves in the ocean, seismic waves in the earth crust, wave propagation in the atmosphere, etc.), are considered. Each subject is introduced with simple physical concepts using numerical examples and models. The treatment then goes into depth and complicated aspects are illustrated by appropriate generalizations. Numerous exercises with solutions will help students to comprehend and assimilate the ideas.

Lamb-Wave Based Structural Health Monitoring in Polymer Composites

Travelling wave processes and wave motion are of great importance in many areas of mechanics, and nonlinearity also plays a decisive role there. The basic mathematical models in this area involve nonlinear partial differential equations, and predictability of behaviour of wave phenomena is of great importance. Beside fluid dynamics and gas dynamics, which have long been the traditional nonlinear scienes, solid mechanics is now taking an ever increasing account of nonlinear effects. Apart from plasticity and fracture mechanics, nonlinear elastic waves have been shown to be of great importance in many areas, such as the study of impact, nondestructive testing and seismology. These lectures offer a thorough account of the fundamental theory of nonlinear deformation waves, and in the process offer an up to date account of the current state of research in the theory and practice of nonlinear waves in solids.

Inhomogeneous Waves in Solids and Fluids

Self-contained coverage of topics ranging from elementary theory of waves and vibrations in strings to three-dimensional theory of waves in thick plates. Over 100 problems.

Wave Propagation in Layered Anisotropic Media

This book focuses on basic and advanced concepts of wave propagation in diverse material systems and structures. Topics are organized in increasing order of complexity for better appreciation of the subject. Additionally, the book provides basic guidelines to design many of the futuristic materials and devices for varied applications. The material in the book also can be used for designing safer and more lightweight structures such as aircraft, bridges, and mechanical and structural components. The main objective of this book is to bring both the introductory and the advanced topics of wave propagation into one text. Such a text is necessary considering the multi-disciplinary nature of the subject. This book is written in a step-by step modular approach wherein the chapters are organized so that the complexity in the subject is slowly introduced with increasing chapter numbers. Text starts by introducing all the fundamental aspects of wave propagations and then moves on to advanced topics on the subject. Every chapter is provided with a number of numerical examples of increasing complexity to bring out the concepts clearly The solution of wave propagation is computationally very intensive and hence two different approaches, namely, the Finite Element method and the Spectral Finite method are introduced and have a strong focus on wave propagation. The book is supplemented by an exhaustive list of references at the end of the book for the benefit of readers.

Wave Propagation in Elastic Solids

Self-contained coverage of topics ranging from elementary theory of waves and vibrations in strings to three-dimensional theory of waves in thick plates. Over 100 problems.

Stress Waves in Solids

Comprehensive, self-contained coverage of a variety of topics ranges from the elementary theory of waves and vibrations in strings to three-dimensional theory of waves in thick plates. Emphasis on analytical and experimental results, in addition to theoretical development. Appendices contain introductory material on elasticity, transforms, experimental techniques. Over 100 problems.