Elements Of Gas Dynamics A Roshko

The P1-RKDG Method for Two-dimensional Euler Equations of Gas Dynamics
The Dynamics and Thermodynamics of Compressible Fluid Flow
Fundamentals of Gas Dynamics
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Mechanics of Liquids and Gases
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Thermodynamics, Gas Dynamics, and Combustion
Elements of Numerical Methods for Compressible Flows
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The Spectra and Dynamics of Diatomic Molecules
Hypersonic and High Temperature Gas Dynamics

CAMRYN BRIGHT

The P1-RKDG Method for Two-dimensional Euler Equations of Gas Dynamics John Wiley & Sons
The Finite Element Method: Its Basis and Fundamentals offers a complete introduction to the basis of the finite element method, covering fundamental theory and worked examples in the detail required for readers to apply the knowledge to their own engineering problems and understand more advanced applications. This edition sees a significant rearrangement of the book's content to enable clearer development of the finite element method, with major new chapters and sections added to cover: Weak forms Variational forms Multi-dimensional field problems Automatic mesh generation Plate bending and shells Developments in meshless techniques Focusing on the core knowledge, mathematical and analytical tools needed for successful application, The Finite Element Method: Its Basis and Fundamentals is the authoritative resource of choice for graduate level students, researchers and professional engineers involved in finite element-based engineering analysis. A proven keystone reference in the library of any engineer needing to understand and apply the finite element method in design and development. Founded by an influential pioneer in the field and updated in this seventh edition by an author team incorporating academic authority and industrial simulation experience. Features reworked and reordered contents for clearer development of the theory, plus new chapters and sections on mesh generation, plate bending, shells, weak forms and variational forms.
The Dynamics and Thermodynamics of Compressible Fluid Flow Cambridge University Press
Comprehensive review of detonation explores the "simple theory" and experimental tests of the theory; flow in a reactive medium; steady detonation; the nonsteady solution; and the structure of the detonation front. 1979 edition.
Fundamentals of Gas Dynamics McGraw-Hill Companies
Publisher description
An Investigation Into the Undsteady Gas Dynamics Through Automotive Catalyst Elements Amer Inst of Aeronautics &
This is an introductory level textbook which explains the elements of high temperature and high-speed gas

dynamics. written in a clear and easy to follow style, the author covers all the latest developments in the field including basic thermodynamic principles, compressible flow regimes and waves propagation in one volume covers theoretical modeling of High Enthalpy Flows, with particular focus on problems in internal and external gas-dynamic flows, of interest in the fields of rockets propulsion and hypersonic aerodynamics High enthalpy gas dynamics is a compulsory course for aerospace engineering students and this book is a result of over 25 years' teaching by the author accompanying website includes a Solutions Manual for exercises listed at the end of each chapter, plus lecture slides

Cold Spray Technology Springer Science & Business Media

First-rate text covers thermodynamics, one-dimensional gas dynamics and one-dimensional wave motion, waves in supersonic flow, flow in ducts and wind tunnels, methods of measurement, the equations of frictionless flow, small-perturbation theory, and more.

Foundations of Gas Dynamics Elsevier

Aerodynamics is a science engaged in the investigation of the motion of air and other gases and their interaction with bodies, and is one of the most important bases of the aeronautic and astronautic techniques. The continuous improvement of the configurations of the airplanes and the space vehicles aid the constant enhancement of their performances are closely related with the development of the aerodynamics. In the design of new flying vehicles the aerodynamics will play more and more important role. The undertakings of aeronautics and astronautics in our country have gained achievements of world interest, the aerodynamics community has made outstanding contributions for the development of these undertakings and the science of aerodynamics. To promote further the development of the aerodynamics, meet the challenge in the new century, summary the experience, cultivate the professional personnel and to serve better the cause of aeronautics and astronautics and the national economy, the present Series of Modern Aerodynamics is organized and published.

Modern Developments in Gas Dynamics Elsevier

In any rotating machinery system, the bearing has traditionally been a crit ical member of the entire system, since it is the component that permits the relative motion between the stationary and moving parts. Depending on the application, a number of different bearing types have been used, such as oil-lubricated hydrodynamic bearings, gas bearings, magnetic suspensions, rolling element bearings, etc. Hydrodynamic bearings can provide any desired load support, but they are limited in stiffness and the associated power loss may be quite large. Gas bearings are used for high-precision applications where the supported loads are relatively light, bearing power losses are very low, and the rotating speeds generally high. For super precision components where no frictional dissipation or bearing power loss can be tolerated, magnetic suspensions are employed; again, the load support requirements are very low. Rolling element bearings have been widely used for those applications that require greater bearing versatility, due to the requirements for high-load and high-stiffness characteristics, while allowing moderate power loss and permitting variable speeds. A study of the dynamic interaction of rolling elements is, therefore, the subject of this text. Texts covering the analysis and design methodology of rolling elements are very limited. Notable works include Analysis of Stresses and Deflections (Jones, 1946, Vols. I and II), Ball and Roller Bearings, Their Theory, Design and Application (Eschmann, Hasbargen, and Weigand, 1958), Ball and Roller Bearing Engineering (Palmgren, 1959, 3rd ed.), Advanced Bearing Technology (Bisson and Anderson, 1965), and Rolling Bearing Analysis (Harris, 1966).

Dynamics of Gas-Surface Scattering Springer Nature

This book is written for graduate students just beginning research, for theorists curious about what experimentalists actually can and do measure, and for experimentalists bewildered by theory. It is a guide for potential users of spectroscopic data, and uses language and concepts that bridge the frequency- and time-domain spectroscopic communities. Key topics, concepts, and techniques include: the assignment of simple spectra, basic experimental techniques, definition of Born-Oppenheimer and angular momentum basis sets and the associated spectroscopic energy level patterns (Hund's cases), construction of effective Hamiltonian matrices to represent both spectra and dynamics, terms neglected in the Born-Oppenheimer approximation (situations intermediate between Hund's cases, spectroscopic perturbations), nonlinear least squares fitting, calculation and interpretation of coupling terms, semi-classical (WKB) approximation, transition intensities and interference effects, direct photofragmentation (dissociation and ionization) and indirect photofragmentation (predissociation and autoionization) processes, visualization of intramolecular dynamics, quantum beats and wavepackets, treatment of decaying quasi-eigenstates using a complex Heff model, and concluding with some examples of polyatomic molecule dynamics. Students will discover that there is a fascinating world of cause-and-effect localized dynamics concealed beyond the reduction of spectra to archival molecular constants and the exact ab initio computation of molecular properties. Professional spectroscopists, kinetics, ab initio theorists will appreciate the practical, simplified-model, and rigorous theoretical approaches discussed in this book. Key Features: • A fundamental reference for all spectra of small, gas-phase molecules. • It is the most up-to-date and comprehensive book on the electronic spectroscopy and dynamics of diatomic molecules. • The authors pioneered the development of many of the experimental methods, concepts, models, and computational schemes described in this book. A fundamental reference for all spectra of small, gas-phase molecules. It is the most up-to-date and comprehensive book on the electronic spectroscopy and dynamics of diatomic molecules. The authors pioneered the development of many of the experimental methods, concepts, models, and computational schemes described in this book.

Detonation AIAA

This textbook provides students studying thermodynamics for the first time with an accessible and readable primer on the subject. The book is written in three parts: Part I covers the fundamentals of thermodynamics, Part II is on gas dynamics, and Part III focuses on combustion. Chapters are written clearly and concisely and include examples and problems to support the concepts outlined in the text. The book begins with a discussion of the fundamentals of thermodynamics and includes a thorough analysis of engineering devices. The book moves on to address applications in gas dynamics and combustion to include advanced topics such as two-phase critical flow and blast theory. Written for use in Introduction to Thermodynamics, Advanced Thermodynamics, and Introduction to Combustion courses, this book uniquely covers thermodynamics, gas dynamics, and combustion in a clear and concise manner, showing the integral connections at an advanced

undergraduate or graduate student level.
Elements of Gas Turbine Propulsion Courier Corporation
div=""This textbook on Fundamentals of Gas Dynamics will help students with a background in mechanical and/or aerospace engineering and practicing engineers working in the areas of aerospace propulsion and gas dynamics by providing a rigorous examination of most practical engineering problems. The book focuses both on the basics and more complex topics such as quasi one dimensional flows, oblique shock waves, Prandtl Meyer flow, flow of steam through nozzles, etc. End of chapter problems, solved illustrations and exercise problems are presented throughout the book to augment learning. ^
Aerothermodynamics of Gas Turbine and Rocket Propulsion John Wiley & Sons
Mechanics of Liquids and Gases, Second Edition is a 10-chapter text that covers significant revisions concerning the dynamics of an ideal gas, a viscous liquid and a viscous gas. After an expanded introduction to the fundamental properties and methods of the mechanics of fluids, this edition goes on dealing with the kinetics and general questions of dynamics. The next chapters describe the one-dimensional pipe flow of a gas with friction, the elementary theory of the shock tube; Riemann's theory of the wave propagation of finite intensity, and the theory of plane subsonic and supersonic flows. Other chapters consider the elements of the theory of three-dimensional subsonic and supersonic flows past bodies; the fluctuating laminar flow in a uniform pipe of circular cross-section; the hydrodynamic theory of lubrication; the variational principle of Helmholtz; and the theory of plane and axisymmetric laminar jets. The remaining chapters look into the semi-empirical theories of turbulence and their application in the analysis of axisymmetric jets, with and without swirl, and in the calculation of the resistance of rough plates. These chapters also discuss the dynamics of a viscous gas and the elements of the theory of laminar and turbulent boundary layers at high speeds. This book will be of value to mechanical engineers, physicists, and researchers.
Advanced Dynamics of Rolling Elements Cambridge University Press
The topic of this book is Cold Spray technology. Cold Spray is a process of applying coatings by exposing a metallic or dielectric substrate to a high velocity (300 to 1200 m/s) jet of small (1 to 50 µm) particles accelerated by a supersonic jet of compressed gas. This process is based on the selection of the combination of particle temperature, velocity, and size that allows spraying at the lowest temperature possible. In the Cold Spray process, powder particles are accelerated by the supersonic gas jet at a temperature that is always lower than the melting point of the material, resulting in coating formation from particles in the solid state. As a consequence, the deleterious effects of high-temperature oxidation, evaporation, melting, crystallization, residual stresses, gas release, and other common problems for traditional thermal spray methods are minimized or eliminated. This book is the first of its kind on the Cold Spray process. Cold Spray Technology covers a wide spectrum of various aspects of the Cold Spray technology, including gas-dynamics, physics of interaction of high-speed solid particles with a substrate as well as equipment, technologies, and applications. Cold Spray Technology includes the results of more than 20 years of original studies (1984-2005) conducted at the Institute of Theoretical and Applied Mechanics of the Siberian Division of the Russian Academy of Science, as well as the results of studies conducted at most of the research centres around the world. The authors' goal is threefold. The first goal is to explain basic principles and advantages of the Cold Spray process. The second goal is, to give practical information on technologies and equipment. The third goal is to present the current state of research and development in this field over the world. The book provides coverage and data that will be of interest for users of Cold Spray technology as well as for other coating experts. At the present time the Cold Spray method is recognized by world leading scientists and specialists. A wide spectrum of research is being conducted at many research centres and companies in many countries. New approach to spray coatings Results are exceptionally pure coatings Low spray temperature without degradation of powder and substrate materials High productivity, high deposition efficiency High operational safety because of absence of high temperature gas jets, radiation and explosive gases Excellent thermal and electrical conductivity Wide spectrum of applications because of important advantages of the process
A Least Squares Finite Element Approach to Unsteady Gas Dynamics Courier Corporation
- Organizes all the most frequently used gas data for engineers attempting to solve gas dynamics problems
Elements of Gasdynamics Springer Science & Business Media
Good,No Highlights,No Markup,all pages are intact, Slight Shelfwear,may have the corners slightly dented, may have slight color changes/slightly damaged spine.
Introduction to Reactive Gas Dynamics OUP Oxford
In high energy gas flows, at high velocities and high temperatures, physical and chemical processes such as molecular vibrational excitation, dissociation, ionisation or various reactions take place and deeply influence the structure of the flows. The characteristic times of these processes have the same order of magnitude as aerodynamic characteristic times, so that these reactive media are generally in thermodynamic and chemical non-equilibrium. This book presents a general introductory study of these media. In the first part their fundamental statistical aspects are described, starting from their discrete structure and taking into account the interactions between elementary particles: transport phenomena, relaxation and kinetics as well as their coupling are analysed and illustrated by many examples. The second part deals with the macroscopic re-entry bodies. Finally, the experimental aspects of these flows, their simulations in shock tubes and shock tunnels are described, as well as their application, particularly in the aerospatial domain. This book is intended for students that have acquired a basic knowledge in thermodynamics, statistical physics and fluid mechanics. It will also be of interest to engineers in research and industry, in particular in the aerospace industry, and more generally to all researchers trying to simulate and calculate complex reactive flows.
Introduction to Molecular Beams Gas Dynamics Professional Pubns Inc
Courant and Friedrich's classical treatise was first published in 1948 and tThe basic research for it took place during World War II. However, many aspects make the book just as interesting as a text and a reference today. It treats the dynamics of compressible fluids in mathematical form, and attempts to present a systematic theory of nonlinear wave propagation, particularly in relation to gas dynamics. Written in the form of an advanced textbook, it should appeal to engineers, physicists and mathematicians alike.
Gas Dynamics Elsevier
THE FACT that most books on gas dynamics include separate tables for each simplified flow process casts a shadow of inadequacy over the conventional approach. Why is each process treated as though it were entirely unrelated to the others? Why isn't there, we asked, a generalized approach based on fundamental equations which act as

progenitors for the specific equations of all the simplified flow processes, and which provide insight to more general flow processes? As our solution to the above dilemma, we present a complete treatment of one-dimensional gas dynamics, stressing a fundamental approach. A unified description of this subject is accomplished by means of a single numerical table applicable to the particular gas under study. Separate treatments for the various flow processes are thus combined into one all-encompassing analysis. These tables are intended for the large group of practicing engineers, of which we are members, who daily must solve routine problems in gas dynamics. Aero dynamic, chemical, and mechanical engineers, as well as students of thermo dynamics and gas dynamics, should find these tables useful. The book is divided into five parts. In Chapter 1, we present a generalized compressible flow function r, which is shown to have direct application in the treatment of many simplified one-dimensional flow processes.

Upwind and High-Resolution Schemes Cambridge University Press

This book is a self-contained text for those students and readers interested in learning hypersonic flow and high-temperature gas dynamics. It assumes no prior familiarity with either subject on the part of the reader. If you have never studied hypersonic and/or high-temperature gas dynamics before, and if you have never worked extensively in the area, then this book is for you. On the other hand, if you have worked and/or are working in these areas, and you want a cohesive presentation of the fundamentals, a development of important theory and techniques, a discussion of the salient results with emphasis on the physical aspects, and a presentation of modern thinking in these areas, then this book is also for you. In other words, this book is designed for two roles: 1) as an effective classroom text that can be used with ease by the instructor, and understood with ease by the student; and 2) as a viable, professional working tool for engineers, scientists, and managers who have any contact in their jobs with hypersonic and/or high-temperature flow.

Compressible-fluid Dynamics Oxford University Press, USA

Written primarily to provide petroleum engineers with a systematic analytical approach to the solution of fluid flow problems, this book will nevertheless be of interest to geologists, hydrologists, mining-, mechanical-, or civil engineers. It provides the knowledge necessary for petroleum engineers to develop design methods for drilling, production, transport of oil and gas. Basic mechanical laws are applied for perfect fluid flow, Newtonian fluid, non-Newtonian fluid, and multiple phase flows. Elements of gas dynamics, a non-familiar treatment of shock waves, boundary layer theory, and two-phase flow are also included.

Gas Dynamics (work Book) Pearson

This book lays the foundations of gas- and fluid dynamics.The basic equations are developed from first principles, building on the (assumed) knowledge of Classical Mechanics. This leads to the discussion of the mathematical properties of flows, conservation laws, perturbation analysis, waves and shocks. Most of the discussion centers on ideal (frictionless) fluids and gases. Viscous flows are discussed when considering flows around obstacles and shocks. Many of the examples used to illustrate various processes come from astrophysics and geophysical phenomena.

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