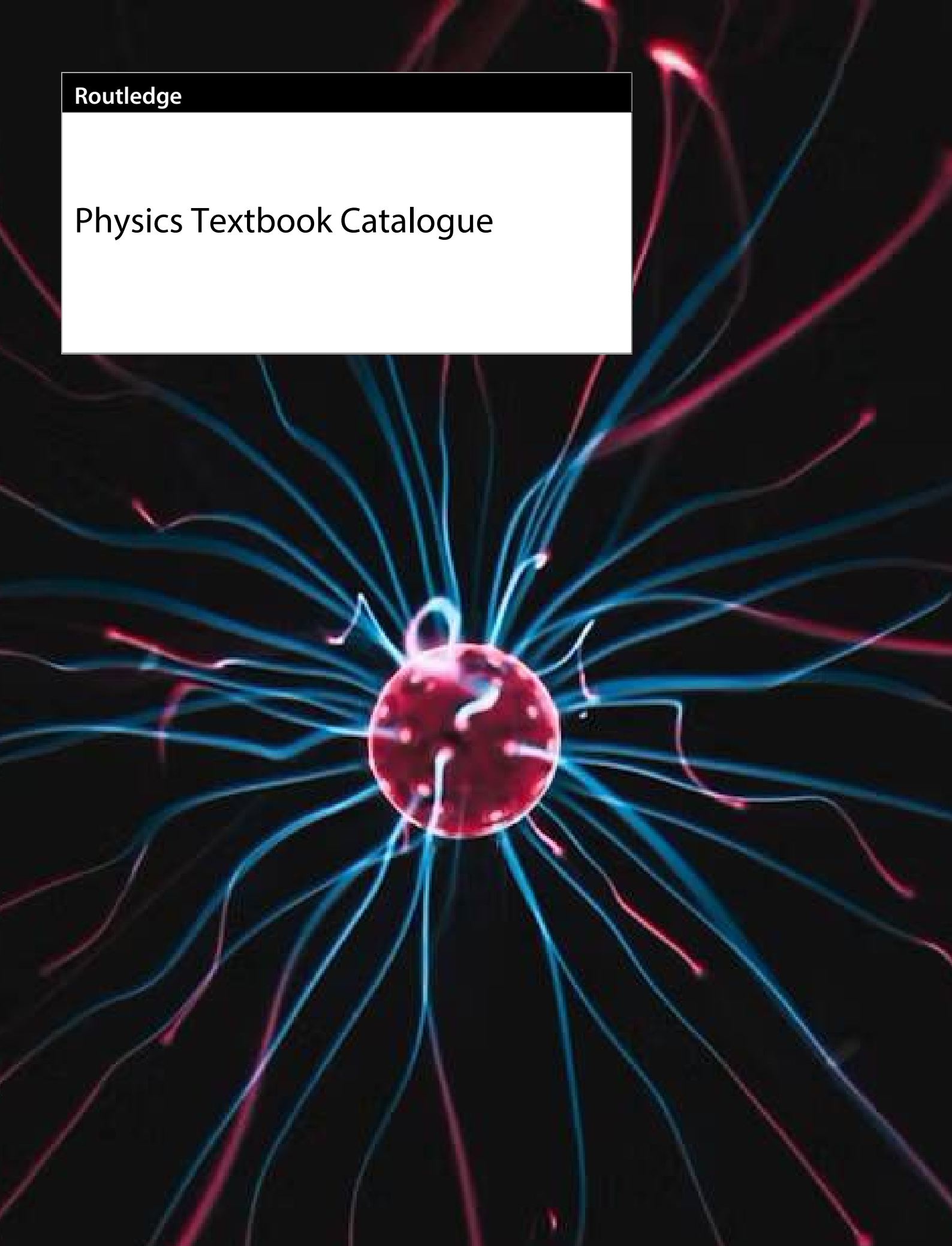


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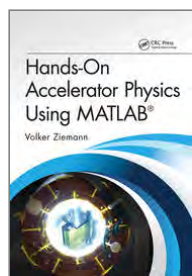
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Hands-On Accelerator Physics Using MATLAB®



Volker Ziemann

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CRC Press

March 2021:372

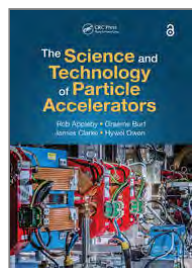
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Rob Appleby, Graeme Burt, James Clarke, Hywel Owen

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CRC Press

August 2022:318

Hb: 978-1-138-49987-4: £115

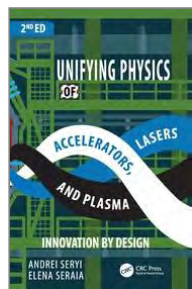
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2ND EDITION

Unifying Physics of Accelerators, Lasers and Plasma



Andrei Seryi, Elena Seraia

Unifying Physics of Accelerators, Lasers and Plasma outlines a path from idea to practical implementation of scientific and technological innovation. This second edition has been updated throughout, with new content on superconducting technology, linacs, energy recovery, polarization, various topics of advanced technology, etc., making it relevant for the Electron-Ion Collider project, as well as for advanced light sources, including energy recovery-based FELs.

CRC Press

March 2023:450

Hb: 978-1-032-35035-6: £145

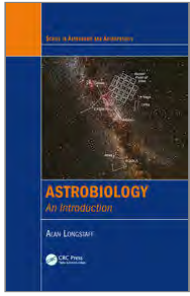
Pb: 978-1-032-35250-3: £58.99

eBook: 978-1-003-32607-6

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Astrobiology

An Introduction



Alan Longstaff

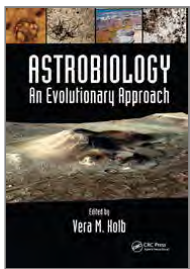
This textbook provides a full introduction to astrobiology suitable for university students at all levels. Reflecting a multiscience approach, the text covers topics such as stellar evolution, cosmic chemistry, planet formation, habitable zones, terrestrial biochemistry, and exoplanetary systems. The book discusses the origin, evolution, distribution, and future of life in the universe in an accessible manner, sparing calculus, curly arrow chemistry, and modeling details. It contains problems and worked examples, and includes a solutions manual with qualifying course adoption.

CRC Press
 March 2021:468
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Astrobiology

An Evolutionary Approach



Edited by **Vera M. Kolb**

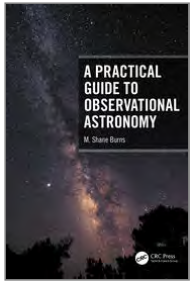
Series: Series in Astrobiology

This book provides a full course in astrobiology with an emphasis on abiogenesis and evolution. It presents astrobiology both as a developing science and as the science of the future. The book begins with an overview of astrobiology, the origin of elements, and the formation of the solar system, planets, and exoplanets. Other topics covered include prebiotic synthesis of biochemical compounds, transition from abiotic to biotic, microorganisms in space, the roles of silicon in life, encapsulation of organic materials in protocells, cold and dry limits of life, viroevolution, and more.

CRC Press
 August 2014:504
 Pb: 978-1-466-58461-7: **£94.99**
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A Practical Guide to Observational Astronomy



M. Shane Burns

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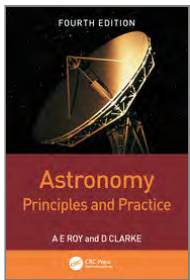
CRC Press
September 2023:174
Hb: 978-0-367-76863-8: **£82.99**
Pb: 978-1-032-06802-2: **£44.99**
eBook: 978-1-003-20391-9

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Principles and Practice, Fourth Edition (PBK)



A.E. Roy, D. Clarke

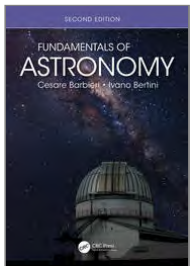
Known to many astronomers as simply "Roy & Clarke," the authors revised and extended this edition to account for developments and changes in teaching over the last decade. It introduces the concepts and historical development of astronomy, presents a course on positional measurement and celestial mechanics, and describes the techniques and instrumentation of modern astronomical observation and measurements for undergraduate students studying astronomy, in addition to anyone who has a strong desire to understand the philosophy and applications of the science of astronomy.

CRC Press
June 2003:500
Hb: 978-1-138-40622-3: **£180**
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Cesare Barbieri, Ivano Bertini

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CRC Press
November 2020:346
Hb: 978-0-367-25349-3: **£175**
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Observational Methods and Astrophysics - Two Volume Set



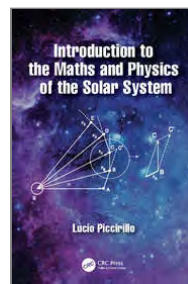
Jonathan Marr, Ronald L. Snell, Stanley E. Kurtz

This two-volume set of introductory textbooks are the first exclusively devoted to radio astronomy, and the telescopes, observation methods, and astrophysical processes that furnish this exciting field. Requiring no prior knowledge of astronomy, the two volumes are ideal textbooks for undergraduate and graduate students on radio astronomy courses, particularly those that emphasize radio wavelength instrumentation and observational techniques or the astrophysics of radio sources. The set enables instructors to pick and choose topics from the two volumes that best fit their courses.

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Lucio Piccirillo

This book provides readers with an understanding of the basic physics and mathematics that governs our solar system. It explores the mechanics of our Sun and planets; their orbits, tides, craters, eclipses and many other fascinating phenomena including asteroids and comets. This book is a valuable resource for undergraduate students studying astronomy and should be used in conjunction with other introductory astronomy textbooks in the field to provide additional learning opportunities.

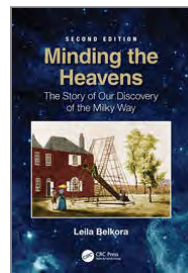
CRC Press
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Pb: 978-0-367-00254-1: **£54.99**
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Minding the Heavens

The Story of our Discovery of the Milky Way



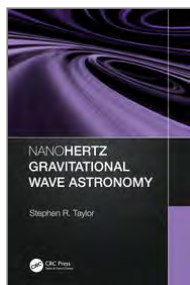
Leila Belkora

This fully updated second edition of Minding the Heavens: The Story of Our Discovery of the Milky Way explores how we learned that we live in a galaxy, in a universe of composed of galaxies and unseen, mysterious dark matter. The story unfolds through short biographies of seven astronomers: Thomas Wright, William Herschel, and Wilhelm Struve of the 18th and 19th centuries; the transitional figure of William Huggins; and Jacobus Kapteyn, Harlow Shapley, and Edwin Hubble of the modern, big-telescope era.

CRC Press
May 2021:274
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Nanohertz Gravitational Wave Astronomy



Stephen R. Taylor

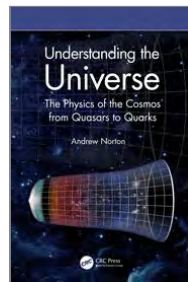
Nanohertz Gravitational Wave Astronomy explores the exciting hunt for low frequency gravitational waves by using the extraordinary timing precision of pulsars.

CRC Press
November 2021:172
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Understanding the Universe

The Physics of the Cosmos from Quasars to Quarks



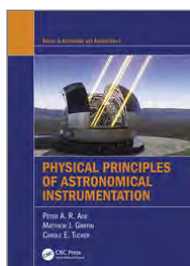
Andrew Norton

Understanding the Universe: The Physics of the Cosmos from Quasars to Quarks explores how all areas of physics, from the very smallest scales to the very largest, come together to form our current understanding of the Universe. It takes readers on a fascinating journey, from the Big Bang and how the Universe has evolved, to how it appears now, and the possibilities for how it will continue to evolve in the future. It also explores the latest exciting developments in the area and how they impact our understanding of the Universe, such as quantum chromodynamics, black holes, dark energy, and gravitational waves.

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Physical Principles of Astronomical Instrumentation



Peter A. R. Ade, Matthew J. Griffin, Carole E. Tucker

Series: Series in Astronomy and Astrophysics

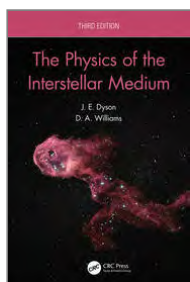
Offering practical advice on a range of wavelengths and tools, this highly accessible, self-contained book presents a broad overview of astronomical instrumentation, techniques, and tools. It provides a toolbox for observational capabilities across the electromagnetic spectrum and a guide to choosing which tools are best suited to different observations. Drawing on the notes and lessons of the authors' established graduate course, the text reviews basic concepts in astrophysics, spectroscopy, and signal analysis and includes illustrative problems and case studies.

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J.E. Dyson, D.A. Williams

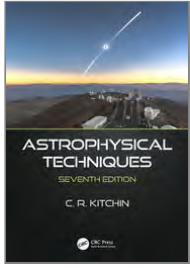
This third edition of The Physics of the Interstellar Medium continues to introduce advanced undergraduates to the fundamental processes and the wide range of disciplines needed to understand observations of the interstellar medium and its role in the Milky Way galaxy. The book is suitable for undergraduate students studying physics, astronomy, and astrophysics. The book also provides concise and straightforward discussions of interstellar physics and chemistry that are useful for more experienced readers.

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CRC Press

July 2020:466

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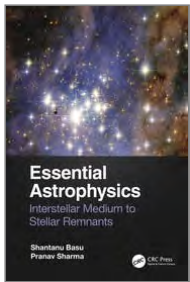
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CRC Press

September 2021:172

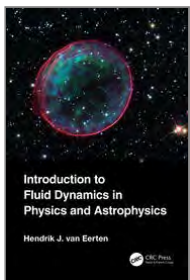
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January 2024:326

Hb: 978-0-367-55777-5: £150

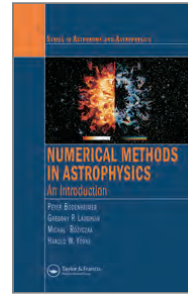
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Numerical Methods in Astrophysics

An Introduction



Peter Bodenheimer, Peter Bodenheimer, Gregory P. Laughlin, Gregory P. Laughlin, Michal Rozyczka, Tomasz Plewa, Harold W. Yorke, Michal Rozyczka, Harold W. Yorke

Series: Series in Astronomy and Astrophysics

This guide develops many numerical techniques for solving major astrophysics problems. After an introduction to the basic equations and derivations, the book focuses on practical applications of the numerical methods. It explores hydrodynamic problems in one dimension, N-body particle dynamics, smoothed particle hydrodynamics, and stellar structure and evolution. The authors also examine advanced techniques in grid-based hydrodynamics, evaluate the methods for calculating the gravitational forces in an astrophysical system, and discuss specific problems in grid-based methods for radiation transfer. The book incorporates user manuals and a CD-ROM of the numerical codes.

CRC Press

December 2006:346

Hb: 978-0-750-30883-0: £99.99

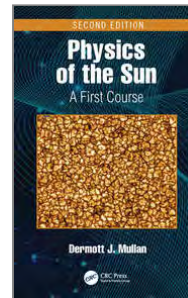
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CRC Press

September 2022:434

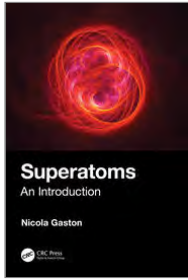
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Nicola Gaston

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CRC Press

April 2023:114

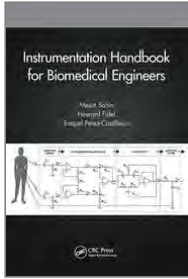
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Instrumentation Handbook for Biomedical Engineers



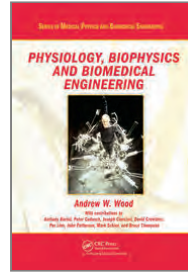
Mesut Sahin, Howard Fidel, Raquel Perez-Castillejos

The book fills a void as a textbook with hands-on laboratory exercises designed for biomedical engineering undergraduates in their senior year or the first year of graduate studies specializing in electrical aspects of bioinstrumentation. Each laboratory exercise concentrates on measuring a biophysical or biomedical entity, such as force, blood pressure, temperature, heart rate, respiratory rate, etc., and guides students through all the way from sensor level to data acquisition and analysis on the computer. The book distinguishes itself from others by providing electrical circuits and other measurement setups that have been tested by the authors.

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April 2022:216
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Physiology, Biophysics, and Biomedical Engineering



Edited by **Andrew Wood**

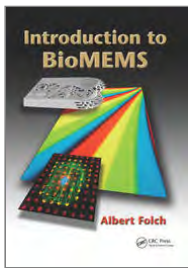
Series: *Series in Medical Physics and Biomedical Engineering*

Showing how biophysics and biomedical engineering have advanced modern medicine, this text provides a multidisciplinary understanding of biological phenomena and the instrumentation for monitoring these phenomena. It also explores the application of physics and engineering methods to medicine and biology. The book includes a range of numerical problems with worked solutions and offers MATLAB® code for advanced mathematical analysis of physiological and clinical monitoring systems. A solutions manual is available with qualifying course adoption.

CRC Press
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Introduction to BioMEMS



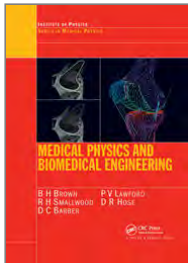
Albert Folch

This classroom-tested book—in color throughout—covers the whole breadth of this dynamic field, including classical microfabrication, microfluidics, tissue engineering, cell-based and noncell-based devices, and implantable systems. It gives readers a real sense of how the field has grown by providing historical perspectives and covering the state of the art. The text contains problem sets, design challenges, key references, and over 400 color figures, most of which are from the original researchers. Downloadable PowerPoint slides are available for instructors.

CRC Press
December 2019:528
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Medical Physics and Biomedical Engineering



B.H. Brown, R.H. Smallwood, D.C. Barber, P.V. Lawford, D.R. Hose

Series: *Series in Medical Physics and Biomedical Engineering*

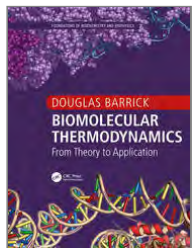
Appropriate for senior undergraduates and graduates, this text presents the underlying physics, electronics, anatomy, and physiology as well as addresses practical applications. The structured approach of the text builds and broadens the material of opening chapters in the later chapters. The book covers biomechanics, image formation techniques, biomedical devices, physiological signals and responses, and respiratory and cardiovascular function and measurement. It includes chapter problems with short questions to test understanding of the main principles and longer questions to test more in-depth knowledge, along with detailed bibliographies that provide references to introductory texts and research materials.

CRC Press
January 1998:762
Pb: 978-0-750-30368-2: £94.99
eBook: 978-1-315-27560-4

* For full contents and more information, visit: www.routledge.com/9780750303682

Biomolecular Thermodynamics

From Theory to Application



Douglas Barrick

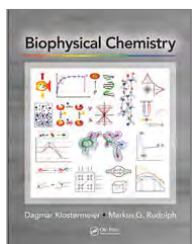
Series: *Foundations of Biochemistry and Biophysics*

This book introduces the concepts and practical tools necessary to understand the behavior of biological macromolecules at a quantitative level. It begins by describing biochemical phenomena using principles of classical and statistical thermodynamics. Unlike other books, this text goes beyond theory to explain in detail how the equations are applied to the analysis of experimental measurements. This emphasis on real-world applications is continued throughout and is a major feature of the book.

CRC Press
September 2017:552
Hb: 978-1-138-06884-1: £175
Pb: 978-1-439-80019-5: £110
eBook: 978-1-315-38019-3

* For full contents and more information, visit: www.routledge.com/9781439800195

Biophysical Chemistry



Dagmar Klostermeier, Markus G. Rudolph

This book is a comprehensive text for undergraduate physical chemistry courses for biophysics, biochemistry, and the life sciences. It is rich in pedagogical features, containing boxes which provide additional background information on a specific topic, as well as those that provide numerous application examples. It describes a well-balanced spectrum of topics in a concise form, and bridges between theoretical concepts/methods and their applications to enable readers to directly transfer the treated topics to their laboratory projects.

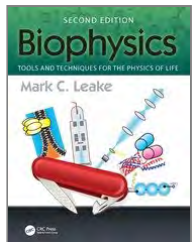
CRC Press
June 2020:792
Hb: 978-1-482-25223-1: £91.99
Pb: 978-0-367-57238-9: £49.99
eBook: 978-1-315-15691-0

* For full contents and more information, visit: www.routledge.com/9780367572389

2ND EDITION

Biophysics

Tools and Techniques for the Physics of Life



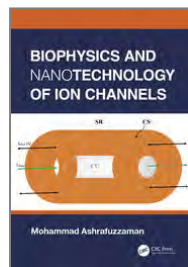
Mark C. Leake

Biophysics: Tools and Techniques for the Physics of Life covers the experimental, theoretical and computational tools and techniques of biophysics. It addresses the purpose, science, and application of all physical science instrumentation, theoretical analysis and biophysical computational methods used in current research labs. The book first presents the historical background, concepts, and motivation for using a physical science toolbox to understand biology. It then familiarizes undergraduate students from the physical sciences with essential biological knowledge.

CRC Press
December 2023:456
Hb: 978-1-032-37321-8: £140
Pb: 978-1-032-37038-5: £52.99
eBook: 978-1-003-33643-3

* For full contents and more information, visit: www.routledge.com/9781032370385

Biophysics and Nanotechnology of Ion Channels



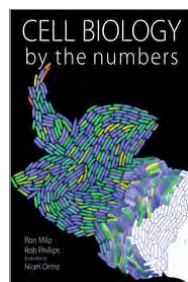
Mohammad Ashrafuzzaman

This book provides a comprehensive review of the biophysics and nanotechnology of ion channels. It details the biological and physiological entities of ion channels in cells and addresses various physical perspectives of ion channel structures and functions.

CRC Press
September 2023:318
Hb: 978-0-367-44545-4: £99.99
Pb: 978-1-032-07374-3: £44.99
eBook: 978-1-003-01065-4

* For full contents and more information, visit: www.routledge.com/9781032073743

Cell Biology by the Numbers



Ron Milo, Rob Phillips

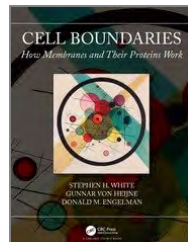
A full color book written as a pocket guide and handy reference for advanced students and practitioners in molecular and cell biology, chemistry, and biophysics. It is based on the BioNumbers website, a peer-reviewed open-source database of numbers, created and curated by author Ron Milo. Well-illustrated and approximately 350 pages long, the book explores some of the key numbers for cell biology, focusing on quantities that help us to think about the sizes, concentrations, rates, energies, information content, and other numbers that describe the living world.

Garland Science
December 2015:400
Pb: 978-0-815-34537-4: £43.99
eBook: 978-0-429-25877-0

* For full contents and more information, visit: www.routledge.com/9780815345374

Cell Boundaries

How Membranes and Their Proteins Work



Stephen White, Gunnar von Heijne, Donald Engelman

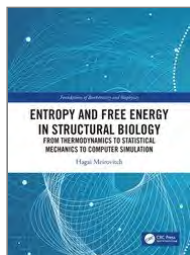
The central themes of Cell Boundaries concern the structural and organizational principles underlying cell membranes, and how these principles enable function. By building a biological and biophysical foundation for understanding the organization of lipids in bilayers and the folding, assembly, stability, and function of membrane proteins, the book aims to broaden the knowledge of bioscience students to include the basic physics and physical chemistry that inform us about membranes. Cell Boundaries was written with advanced undergraduates and beginning graduate students in the biological and physical sciences in mind.

Garland Science
December 2021:564
Hb: 978-0-815-34216-8: £84.99
eBook: 978-0-429-34132-8

* For full contents and more information, visit: www.routledge.com/9780815342168

Entropy and Free Energy in Structural Biology

From Thermodynamics to Statistical Mechanics to Computer Simulation



Hagai Meirovitch

Series: Foundations of Biochemistry and Biophysics

Computer simulation has become the main engine of development in statistical mechanics. In structural biology, computer simulation constitutes the main theoretical tool for structure determination of proteins and for calculation of the free energy of binding, which are important in drug design. Entropy and Free Energy in Structural Biology leads the reader to the simulation technology in a systematic way. Enhanced by a number of solved problems and examples, this volume will be a valuable resource to advanced undergraduate and graduate students in chemistry, chemical engineering, biochemistry biophysics, pharmacology, and computational biology.

CRC Press

April 2022:396

Hb: 978-0-367-40692-9: **£105**

Pb: 978-0-367-42745-0: **£44.99**

eBook: 978-0-367-85478-2

* For full contents and more information, visit: www.routledge.com/9780367427450

2ND EDITION

Physical Biology of the Cell



Rob Phillips, Jane Kondev, Julie Theriot, Hernan Garcia

Physical Biology of the Cell is a textbook for a first course in physical biology or biophysics for undergraduate or graduate students. It maps the huge and complex landscape of cell and molecular biology from the distinct perspective of physical biology. As a key organizing principle, the proximity of topics is based on the physical concepts that unite a given set of biological phenomena. The Second Edition features full-color illustrations throughout, two new chapters, a significantly expanded set of end-of-chapter problems, and is available in a variety of e-book formats.

Garland Science

October 2012:1088

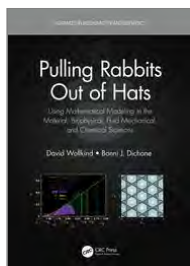
Pb: 978-0-815-34450-6: **£91.99**

eBook: 978-0-429-16883-3

* For full contents and more information, visit: www.routledge.com/9780815344506

Pulling Rabbits Out of Hats

Using Mathematical Modeling in the Material, Biophysical, Fluid Mechanical, and Chemical Sciences



David Wollkind, Bonni J. Dichone

Series: Advances in Biochemistry and Biophysics

Pulling Rabbits Out of Hats: Using Mathematical Modeling in the Material, Biophysical, Fluid Mechanical, and Chemical Sciences focuses on those assumptions made during applied mathematical modeling in which the phenomenological data and the model predictions are self-consistent. This comprehensive reference demonstrates how to employ a variety of mathematical techniques to quantify a number of problems from the material, biophysical, fluid mechanical, and chemical sciences. In doing so, methodology of modelling, analysis, and result generation are all covered.

CRC Press

November 2021:554

Hb: 978-1-032-04787-4: **£180**

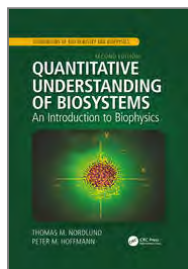
eBook: 978-1-003-19560-3

* For full contents and more information, visit: www.routledge.com/9781032047874

2ND EDITION

Quantitative Understanding of Biosystems

An Introduction to Biophysics, Second Edition



Thomas M. Nordlund, Peter M. Hoffmann

This new edition provides a complete update to the most accessible yet thorough introduction to the physical and quantitative aspects of biological systems and processes involving macromolecules, subcellular structures, and whole cells. It includes two brand new chapters covering experimental techniques, especially atomic force microscopy, complementing the updated coverage of mathematical and computational tools. The authors have also incorporated additions to the multimedia component of video clips and animations, as well as interactive diagrams and graphs.

CRC Press

March 2021:632

Hb: 978-1-138-63341-4: **£130**

Pb: 978-0-367-77991-7: **£44.99**

eBook: 978-1-315-20760-5

* For full contents and more information, visit: www.routledge.com/9780367779917

Textbook of Ion Channels

Three Volume Set



Edited by Jie Zheng, Matthew C. Trudeau

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press

July 2023:1064

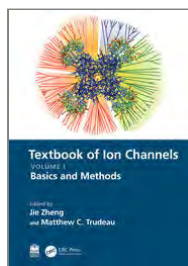
Hb: 978-1-032-42428-6: **£230**

eBook: 978-1-003-46194-4

* For full contents and more information, visit: www.routledge.com/9781032424286

Textbook of Ion Channels Volume I

Fundamental Mechanisms and Methodologies



Edited by Jie Zheng, Matthew C. Trudeau

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume I covers fundamental topics and basic principles, and offers a practical guide of cardinal methods for researching ion channels. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press

June 2023:330

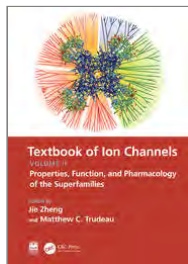
Hb: 978-0-367-53815-6: **£91.99**

eBook: 978-1-003-09621-4

* For full contents and more information, visit: www.routledge.com/9780367538156

Textbook of Ion Channels Volume II

Properties, Function, and Pharmacology of the Superfamilies



Edited by **Jie Zheng, Matthew C. Trudeau**

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume II covers the physiological role, structural components, gating mechanisms, biophysics, permeation, selectivity, regulation, and pharmacology in disease mechanisms. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press

June 2023:488

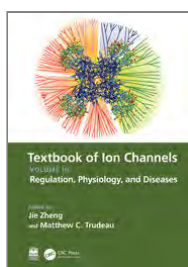
Hb: 978-0-367-53816-3: **£91.99**

eBook: 978-1-003-09627-6

* For **full contents** and more information, visit: www.routledge.com/9780367538163

Textbook of Ion Channels Volume III

Regulation, Physiology, and Diseases



Edited by **Jie Zheng, Matthew C. Trudeau**

This three-volume textbook provides a wide-ranging reference source on ion channels for students, instructors, and researchers. Volume III covers key ion channel regulators, the role of ion channels in selected physiological systems, and examples of mutations and dysfunction in selected diseases. The modern methods used in the study of ion channels are powerful and diverse, and all three volumes give the reader an introduction to the fundamental concepts of the mechanism of ion channels, a guide to technical research aspects, a modern guide to the properties of major ion channel families, and include key examples of regulatory, physiological, and disease roles for ion channels.

CRC Press

June 2023:246

Hb: 978-0-367-53819-4: **£91.99**

eBook: 978-1-003-31031-0

* For **full contents** and more information, visit: www.routledge.com/9780367538194

Quantitative Bioimaging

An Introduction to Biology, Instrumentation, Experiments, and Data Analysis for Scientists and Engineers



Raimund J. Ober, E. Sally Ward, Jerry Chao

Cellular microscopy for live cell imaging has become an indispensable tool for solving biological problems. This textbook provides a truly unique introduction that integrates the concepts and methods of optics, molecular and cellular biology, image analysis, and bioengineering. The coverage spans from essential aspects of molecular and cellular biology to a detailed treatment of practical aspects, addressing such topics as colocalization, intracellular trafficking, 3D reconstruction, and membrane receptor dynamics. The authors take a two-tiered approach in later chapters, providing a survey level overview followed by in-depth discussion that gives more detailed explanations.

CRC Press

January 2022:503

Hb: 978-1-138-59898-0: £105

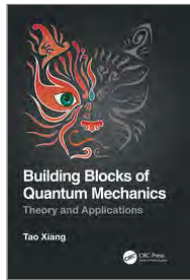
Pb: 978-0-367-61545-1: £46.99

eBook: 978-0-429-46989-3

* For full contents and more information, visit: www.routledge.com/9780367615451

Building Blocks of Quantum Mechanics

Theory and Applications



Tao Xiang

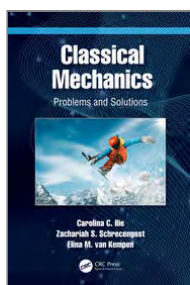
This textbook provides a concise yet comprehensive introduction to the principles, concepts, and methods of quantum mechanics. It covers the basic building blocks of quantum mechanics theory and applications, illuminated throughout by physical insights and examples of quantum mechanics, such as the one-dimensional eigen-problem, the harmonic oscillator, the Aharonov-Bohm effect, Landau levels, the hydrogen atom, the Landau-Zener transition and the Berry phase.

CRC Press
May 2022:264
Hb: 978-1-032-00610-9: **£150**
Pb: 978-0-367-77150-8: **£58.99**
eBook: 978-1-003-17488-2

* For full contents and more information, visit: www.routledge.com/9780367771508

Classical Mechanics

Problems and Solutions



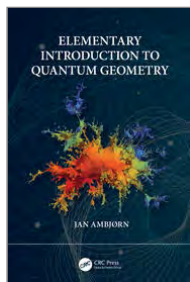
Carolina C. Ilie, Zachariah S. Schrecengost, Elina M. van Kempen

This book of problems and solutions in classical mechanics is dedicated to junior or senior undergraduate students in physics, engineering, applied mathematics, astronomy, or chemistry who may want to improve their problems solving skills, or to freshman graduate students who may be seeking a refresh of the material. The book is structured in ten chapters, starting with Newton's laws, motion with air resistance, conservation laws, oscillations, and the Lagrangian and Hamiltonian Formalisms.

CRC Press
December 2022:280
Hb: 978-0-367-76844-7: **£76.99**
eBook: 978-1-003-36570-9

* For full contents and more information, visit: www.routledge.com/9780367768447

Elementary Introduction to Quantum Geometry



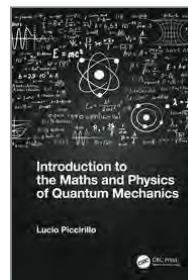
Jan Ambjorn

This graduate textbook provides an introduction to quantum gravity, when spacetime is two-dimensional. The quantization of gravity is the main missing piece of theoretical physics, but in two dimensions it can be done explicitly with elementary mathematical tools, but it still has most of the conceptual riddles present in higher dimensional (not yet known) quantum gravity.

CRC Press
November 2022:290
Hb: 978-1-032-33555-1: **£76.99**
eBook: 978-1-003-32056-2

* For full contents and more information, visit: www.routledge.com/9781032335551

Introduction to the Maths and Physics of Quantum Mechanics



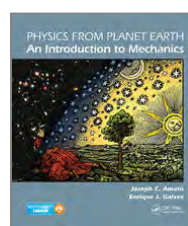
Lucio Piccirillo

This book will appeal to first- and second-year university students in physics, mathematics, engineering and other sciences studying quantum mechanics who will find material and clarifications not easily found in other textbooks. It will also appeal to self-taught readers with a genuine interest in modern physics who are willing to examine the mathematics and physics in a simple but rigorous way.

CRC Press
October 2023:246
Hb: 978-0-367-70302-8: **£76.99**
eBook: 978-1-003-14556-1

* For full contents and more information, visit: www.routledge.com/9780367703028

Physics from Planet Earth - An Introduction to Mechanics



Joseph C. Amato, Enrique J. Galvez

This classroom-tested text provides a one-semester, calculus-based introduction to classical mechanics for first-year undergraduate students. The authors introduce the three conservation laws as fundamental laws of nature from which secondary concepts are derived and organize topics around the conservation laws. They also illustrate many topics through real, contemporary applications in astronomy, planetary science, and space travel. The book includes short exercises throughout the text as well as novel problems at the end of each chapter.

CRC Press
June 2015:612
Hb: 978-1-439-86783-9: **£86.99**
eBook: 978-0-429-19447-4

* For full contents and more information, visit: www.routledge.com/9781439867839

6TH EDITION

Quantum Mechanics



Alastair I. M. Rae, Jim Napolitano

This sixth edition builds on its highly praised predecessors to make the text even more accessible to a wider audience. It contains three new chapters that review prerequisite physics and mathematics, laying out the notation, formalism, and physical basis necessary for the rest of the book. Along with more problems, this edition also presents short descriptions of numerous applications relevant to the physics discussed, offering a brief look at what quantum mechanics has made possible industrially and scientifically.

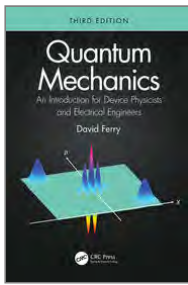
CRC Press
December 2015:440
Hb: 978-1-138-45833-8: **£185**
Pb: 978-1-482-29918-2: **£56.99**
eBook: 978-0-429-15734-9

* For full contents and more information, visit: www.routledge.com/9781482299182

3RD EDITION

Quantum Mechanics

An Introduction for Device Physicists and Electrical Engineers



David Ferry

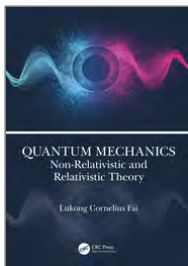
Quantum Mechanics: An Introduction for Device Physicists and Electrical Engineers, Third Edition provides a complete course in quantum mechanics for students of semiconductor device physics and electrical engineering. It provides the necessary background to quantum theory for those starting work on micro- and nanoelectronic structures and is particularly useful for those beginning work with modern semiconductor devices, lasers, and qubits.

CRC Press
December 2020:328
Hb: 978-0-367-46915-3: £210
Pb: 978-0-367-46727-2: £79.99
eBook: 978-1-003-03194-9

* For full contents and more information, visit: www.routledge.com/9780367467272

Quantum Mechanics

Non-Relativistic and Relativistic Theory



Lukong Cornelius Fai

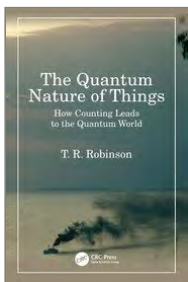
This book provides an accessible treatment of non-relativistic and relativistic quantum mechanics. It is an ideal textbook for undergraduate and graduate physics students, as well as researchers in theoretical physics, quantum mechanics, condensed matter, mathematical physics, quantum chemistry and electronic students.

CRC Press
June 2022:552
Hb: 978-1-032-22146-5: £115
eBook: 978-1-003-27307-3

* For full contents and more information, visit: www.routledge.com/9781032221465

The Quantum Nature of Things

How Counting Leads to the Quantum World



T R Robinson

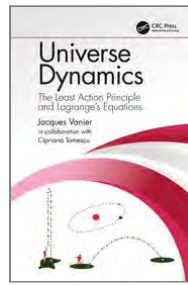
This book offers readers an entirely original and unconventional view of quantum mechanics. It is a view that accepts quantum mechanics as the natural way to think about the way nature works, rather than the view commonly expressed, especially in books on quantum physics, that quantum theory is weird and counterintuitive. It is based on the concept of itemization. From this simple premise, quantities like energy and momentum, both linear and angular emerge naturally, as do configuration space, potentials, the electromagnetic field, many-body dynamics, special relativity and relativistic wave mechanics.

CRC Press
April 2023:282
Hb: 978-1-032-44623-3: £120
Pb: 978-1-032-45546-4: £45.99
eBook: 978-1-003-37750-4

* For full contents and more information, visit: www.routledge.com/9781032455464

Universe Dynamics

The Least Action Principle and Lagrange's Equations



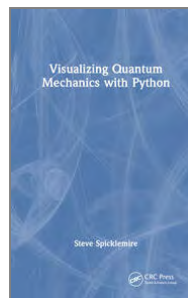
Jacques Vanier, Cipriana Tomescu

Brought together in one focused and exclusive treatment, this book provides an elementary introduction to the important role and use of the least action principle and the resulting Lagrange's equations in the analysis of the laws that govern the universe. It is an ideal complimentary resource to accompany undergraduate courses and textbooks on classical mechanics.

CRC Press
January 2019:184
Hb: 978-1-138-33589-9: £200
Pb: 978-1-138-33579-0: £56.99
eBook: 978-0-429-44347-3

* For full contents and more information, visit: www.routledge.com/9781138335790

Visualizing Quantum Mechanics with Python



Steve Spicklemire

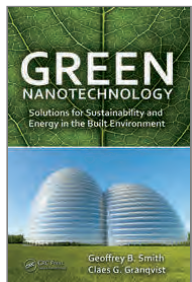
The goal of this book is to reduce the complexity and clarify the abstractions with concrete visual examples driven by simple python programs. It is assumed that the reader is concurrently taking a course in quantum mechanics, or self-studying quantum mechanics, but is looking for supplementary material to help with understanding and visualizing how quantum mechanics works.

CRC Press
June 2024:72
Hb: 978-0-367-76879-9: £48.99
Pb: 978-1-032-56924-6: £18.99

* For full contents and more information, visit: www.routledge.com/9781032569246

Green Nanotechnology

Solutions for Sustainability and Energy in the Built Environment



Geoffrey B. Smith, Claes-Goran S. Granqvist

A focused exploration of the role nanotechnology plays in meeting the challenges inherent in minimizing environmental impacts while maximizing energy resources, this book provides an overview of our energy supply, increasing energy production while reducing cost, and offering novel energy sources. It explores the ways in which nanotechnologies can improve structural engineering of energy sources, create novel methods of cooling, and inspire new approaches to water supply and treatment. In addressing these critical issues, the book provides an authoritative resource that provides the foundation for new research and product development.

CRC Press

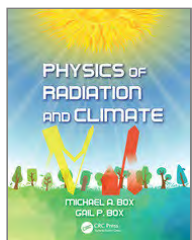
September 2010:484

Hb: 978-1-420-08532-7: £170

eBook: 978-0-429-19304-0

* For full contents and more information, visit: www.routledge.com/9781420085327

Physics of Radiation and Climate



Michael A. Box, Gail P. Box

This book offers an introduction to the physics of climate science. It is divided into three main sections, with the first providing an introduction to the atmosphere and ocean—their composition, thermodynamics, vertical structure, and basic flow patterns. The next chapters focus on the central physics of interactions between radiation, gases, and particles, addressing the core phenomena of absorption, emission, scattering, and radiative transfer. The final section integrates those principles and how they are applied in the study of weather and climate change.

CRC Press

October 2015:514

Hb: 978-1-138-42426-5: £175

Pb: 978-1-466-57205-8: £94.99

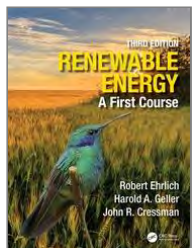
eBook: 978-0-429-19422-1

* For full contents and more information, visit: www.routledge.com/9781466572058

3RD EDITION

Renewable Energy

A First Course



Robert Ehrlich, Harold A. Geller, John R. Cressman

This revised edition is fully updated and continues to provide the best in-depth introduction to renewable energy science. It focuses mainly on renewable energy, but also addresses nonrenewable energy (fossil fuels and nuclear technology). The coverage extends from the basic physics to conservation, economic, and public policy issues, with strong emphasis on explaining how things work in practice. The authors avoid technical jargon and advanced math, but address fundamental analytical skills with wide application. Updated statistics, figures, policies, trends, and technological advancements will bring the reader up to speed with the current state of renewable energy.

CRC Press

July 2022:562

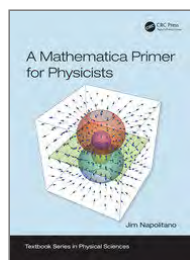
Hb: 978-1-032-00088-6: £240

Pb: 978-0-367-76837-9: £91.99

eBook: 978-1-003-17267-3

* For full contents and more information, visit: www.routledge.com/9780367768379

A Mathematica Primer for Physicists



Jim Napolitano

Series: Textbook Series in Physical Sciences

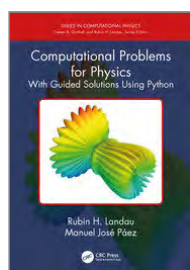
This book offers the most concise and approachable guide for quickly getting into Mathematica and using it for solving common problems. The author addresses a wide range of problems, including numerical calculations, animation, and visualization tools. Each chapter begins with simple commands, and then shows how to apply them. The goal is to give the essentials necessary for readers to get started, without getting bogged down in unnecessary details. The writing is clear and conversational, making it accessible and easy for the reader to follow.

CRC Press
March 2018:214
Hb: 978-1-138-48656-0: £175
Pb: 978-1-138-03509-6: £59.99
eBook: 978-1-315-26948-1

* For full contents and more information, visit: www.routledge.com/9781138035096

Computational Problems for Physics

With Guided Solutions Using Python



Rubin H. Landau, Manuel José Páez

Series: Series in Computational Physics

Our future scientists and professionals must be conversant in computational techniques. In order to facilitate integration of computer methods into existing physics courses, this textbook offers a large number of worked examples and problems with fully guided solutions in Python as well as other languages (Mathematica, Java, C, Fortran, and Maple) on the Web. It's also intended as a self-study guide for learning how to use computer methods in physics. The authors include an introductory chapter on numerical tools and indication of computational as well as a separate chapter with problems for beginning students.

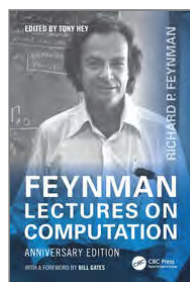
CRC Press
June 2018:430
Hb: 978-1-138-70591-3: £105
Pb: 978-1-138-70541-8: £69.99
eBook: 978-1-315-20209-9

* For full contents and more information, visit: www.routledge.com/9781138705418

2ND EDITION

Feynman Lectures on Computation

Anniversary Edition



Edited by Tony Hey

Series: Frontiers in Physics

The last lecture course that Nobel Prize winner Richard P. Feynman gave at Caltech from 1983 to 1986 was not on physics but on computer science. The first edition of this book published in 1996 and provided an overview of standard and not-so-standard topics in computer science given in Feynman's inimitable style. The material is still relevant and interesting, and Feynman's unique philosophy of learning and discovery shines through. For this new edition, editor Tony Hey has updated the lectures with invited chapters from preeminent scholars. This exciting and important work provides key reading for students and scholars in the fields of computer science and computational physics.

CRC Press
May 2023:426
Hb: 978-1-032-41588-8: £125
Pb: 978-0-367-85733-2: £49.99
eBook: 978-1-003-35881-7

* For full contents and more information, visit: www.routledge.com/9780367857332

Introduction to Bioinformatics and Clinical Scientific Computing



Paul S. Ganney

This textbook provides an introduction to computer science theory, informatics best practice, and the standards and legislation that apply to computing in a healthcare environment. It delivers an accessible discussion of databases (construction, interrogation and maintenance); networking (design and low-level application); programming (best practice rather than the specifics of any one language – design, maintenance, safety).

CRC Press
December 2022:404
Hb: 978-1-032-32413-5: £76.99
eBook: 978-1-003-31624-4

* For full contents and more information, visit: www.routledge.com/9781032324135

Introduction to Python for Science and Engineering



David J. Pine

Series: Series in Computational Physics

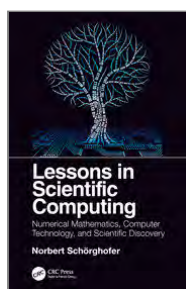
This guide offers a rapid introduction to Python programming to anyone with no experience in programming, taking a careful and methodical approach to presenting the features available and their use for performing practical scientific and engineering tasks. It shows why Python is such a widely appealing program, covering its syntax, data structures, input and output, plotting, conditionals and loops, user-defined functions, curve fitting, and numerical routines. The text includes detailed instructions on how to install Python on Windows, Apple, and Linux platforms. It includes dedicated chapters on animation, object-oriented programming, and how to use Jupyter notebooks.

CRC Press
December 2018:388
Hb: 978-1-138-58390-0: £165
Pb: 978-1-138-58389-4: £54.99
eBook: 978-0-429-50641-3

* For full contents and more information, visit: www.routledge.com/9781138583894

Lessons in Scientific Computing

Numerical Mathematics, Computer Technology, and Scientific Discovery



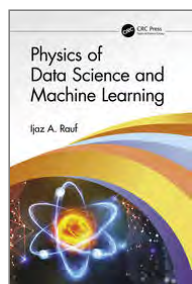
Norbert Schorghofer

Taking an interdisciplinary approach, this new book provides a modern introduction to scientific computing, exploring numerical methods, computer technology, and their interconnections, which are treated with the goal of facilitating scientific research across all disciplines. Each chapter provides an insightful lesson and viewpoints from several subject areas are often compounded within a single chapter. Written with an eye on usefulness, longevity, and breadth, Lessons in Scientific Computing will serve as a "one stop shop" for undergrad students taking a unified course in scientific computing, or seeking a single cohesive text spanning multiple courses.

CRC Press
October 2018:204
Hb: 978-1-138-07063-9: £200
Pb: 978-1-138-07058-5: £59.99
eBook: 978-1-315-10835-3

* For full contents and more information, visit: www.routledge.com/9781138070585

Physics of Data Science and Machine Learning



Ijaz A. Rauf

Physics of Data Science and Machine Learning links fundamental concepts of physics to data science, machine learning and artificial intelligence for physicists looking to integrate these techniques into their work.

CRC Press

November 2021:210

Hb: 978-0-367-76858-4: **£84.99**

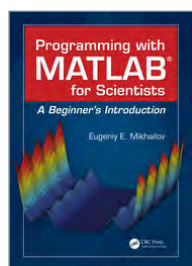
Pb: 978-1-032-07401-6: **£58.99**

eBook: 978-1-003-20674-3

* For full contents and more information, visit: www.routledge.com/9781032074016

Programming with MATLAB for Scientists

A Beginner's Introduction



Eugeny E. Mikhailov

This book offers an introduction to the basics of MATLAB programming to scientists and engineers. The author leads with engaging examples to build a working knowledge, specifically geared to those with science and engineering backgrounds. The reader is empowered to model and simulate real systems, as well as present and analyze everyday data sets. In order to achieve those goals, the contents bypass excessive "under the hood" details, and instead gets right down to the essential, practical foundations for successful programming and modeling.

CRC Press

January 2018:264

Hb: 978-1-138-57004-7: **£145**

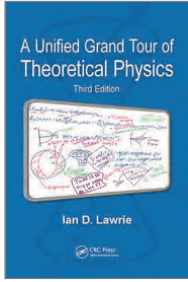
Pb: 978-1-498-73828-6: **£62.99**

eBook: 978-1-351-22818-3

* For full contents and more information, visit: www.routledge.com/9781498738286

3RD EDITION

A Unified Grand Tour of Theoretical Physics



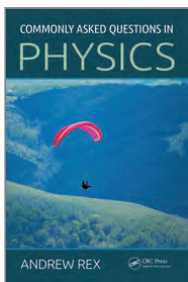
Ian D. Lawrie

The third edition of this best-selling text continues to provide an accessible overview of the fundamental ideas underpinning our understanding of theoretical physics. The basic structure of each theory is explained in explicit mathematical detail with emphasis on conceptual understanding rather than on the technical details of specialized applications. Suitable for undergraduate and graduate courses, this new edition includes updates and advancements in string theory and quantum gravity. A supplementary website provides ancillary material and side issues to create a platform for further research and classroom discussion.

CRC Press
November 2012:711
Hb: 978-1-138-47335-5: **£185**
Pb: 978-1-439-88446-1: **£84.99**
eBook: 978-0-429-11123-5

* For full contents and more information, visit: www.routledge.com/9781439884461

Commonly Asked Questions in Physics



Andrew Rex

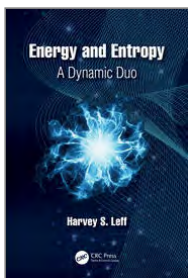
Suitable for a wide audience, this book covers a broad scope of subjects, from classical physics that goes back to the age of Newton to new ideas just formulated in the twenty-first century. The book highlights the core areas of physics that predate the twentieth century, including mechanics, electromagnetism, optics, and thermodynamics. It also focuses on modern physics, covering quantum mechanics, atomic and nuclear physics, fundamental particles, and relativity.

CRC Press
February 2014:256
Hb: 978-1-138-42956-7: **£175**
Pb: 978-1-466-56017-8: **£27.99**
eBook: 978-0-429-19405-4

* For full contents and more information, visit: www.routledge.com/9781466560178

Energy and Entropy

A Dynamic Duo



Harvey S. Leff

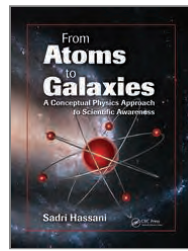
Energy is typically regarded as understandable despite its multiple forms of storage and transfer. Yet entropy is an enigma, in part because of the common view that it represents disorder. That view is flawed and hides entropy's connection with energy. However, macroscopic matter stores internal energy, and that matter's entropy is determined by how the energy is stored. Energy and entropy are intimately linked.

CRC Press
August 2020:330
Hb: 978-0-367-35141-0: **£120**
Pb: 978-0-367-34906-6: **£45.99**
eBook: 978-0-429-33001-8

* For full contents and more information, visit: www.routledge.com/9780367349066

From Atoms to Galaxies

A Conceptual Physics Approach to Scientific Awareness



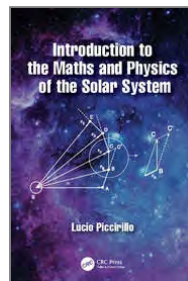
Sadri Hassani

Based on a course given by the author, this text is designed for undergraduates with little science background, demonstrating physical concepts through everyday experiences. Students learn not just how science works, but also how to counter popular misconceptions and pseudoscience. The text presents glossaries, review questions and answers, exercises, numerical problems, and quizzes.

CRC Press
July 2020:756
Hb: 978-1-439-80849-8: **£170**
Pb: 978-0-367-38411-1: **£56.99**
eBook: 978-0-429-06685-6

* For full contents and more information, visit: www.routledge.com/9780367384111

Introduction to the Maths and Physics of the Solar System



Lucio Piccirillo

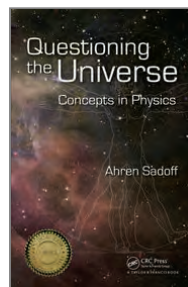
This book provides readers with an understanding of the basic physics and mathematics that governs our solar system. It explores the mechanics of our Sun and planets; their orbits, tides, craters, eclipses and many other fascinating phenomena including asteroids and comets. This book is a valuable resource for undergraduate students studying astronomy and should be used in conjunction with other introductory astronomy textbooks in the field to provide additional learning opportunities.

CRC Press
March 2020:237
Hb: 978-0-367-02271-6: **£140**
Pb: 978-0-367-00254-1: **£54.99**
eBook: 978-0-429-40048-3

* For full contents and more information, visit: www.routledge.com/9780367002541

Questioning the Universe

Concepts in Physics



Ahren Sadoff

Written for the nonscientist, this physics primer tells readers the story of what we have found out about nature so far and how we have done it. It delves into basic laws regarding motion, fundamental forces, electromagnetism, and light; introduces major theories pondered by scientists, including relativity, quantum mechanics, and particle physics; describes the key role played by that elemental building block, the atom; and discusses the evolution of the universe. While it requires only the most minimal math, it does require enough of a sense of curiosity to open one's self to consider what are the factors that keep our universe so orderly, operational, and awesomely beautiful.

Chapman & Hall
December 2008:224
Hb: 978-1-138-42968-0: **£175**
Pb: 978-1-420-08258-6: **£62.99**
eBook: 978-0-429-13812-6

* For full contents and more information, visit: www.routledge.com/9781420082586

3RD EDITION

Superstrings and Other Things

A Guide to Physics

**Carlos I. Calle**

Continuing to take readers on a uniquely accessible journey through physics, *Superstrings and Other Things*, Third Edition, explains the basic concepts of motion, energy, and gravity, right up to the latest theories about the structure of matter, the origin and structure of the universe, and the beginning of time.

CRC Press

May 2020:474

Hb: 978-1-138-36492-9: £200

Pb: 978-1-138-36488-2: £58.99

eBook: 978-0-429-43102-9

* For full contents and more information, visit: www.routledge.com/9781138364882

Essentials of Soft Matter Science



Françoise Brochard-Wyart, Pierre Nassoy, Pierre-Henri Puech

Authored by world-leading physicists, this introductory textbook explores the basic principles of polymers, colloids, liquid crystals, wetting, and foams. It is a practical 'toolbox' for readers to acquire basic knowledge in the field and facilitate further reading and advanced courses.

Undergraduate students in physics, biology, and the medical sciences will learn the basics of soft matter physics, in addition to scaling approaches in the spirit of the Nobel prize laureate in physics in 1991, Pierre-Gilles de Gennes, the inventor of soft matter physics and close collaborator to author Françoise Brochard-Wyart.

CRC Press

September 2019:290

Hb: 978-1-138-74276-5: £195

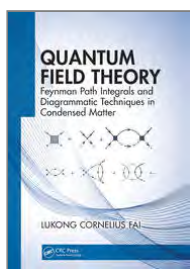
Pb: 978-1-498-77392-8: £79.99

eBook: 978-0-429-15435-5

* For full contents and more information, visit: www.routledge.com/9781498773928

Quantum Field Theory

Feynman Path Integrals and Diagrammatic Techniques in Condensed Matter



Lukong Cornelius Fai

This book explores quantum field theory using the Feynman functional and diagrammatic techniques as foundations to apply Quantum Field Theory to a broad range of topics in physics. This book will be of interest not only to condensed matter physicists but physicists in a range of disciplines as the techniques explored apply to high-energy as well as soft matter physics.

CRC Press

March 2021:535

Hb: 978-0-367-18574-9: £150

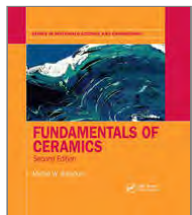
Pb: 978-0-367-77959-7: £44.99

eBook: 978-0-429-19694-2

* For full contents and more information, visit: www.routledge.com/9780367779597

2ND EDITION

Fundamentals of Ceramics



Michel Barsoum

This second edition of *Fundamentals of Ceramics* adds a section on density functional theory calculations for shedding light on properties. It also adds more on applications, including solid oxide fuel cells as a case study and a major overhaul of the last chapter on optical properties. There's also new and extended discussion of such topics as non-parabolic oxidation, dislocation creep, thermal conductivity, ferroelectric ceramics, ferromagnetic ceramics, scattering mechanisms, surface tension, and processing of ceramics from aqueous environments.

CRC Press
June 2022:644
Hb: 978-1-498-70813-5: £120
Pb: 978-1-032-33730-2: £45.99
eBook: 978-1-498-70816-6

* For full contents and more information, visit: www.routledge.com/9781032337302

2ND EDITION

Fundamentals of Soft Matter Science



Linda S. Hirst

This revised edition continues to provide the most approachable introduction to the structure, characteristics, and everyday applications of soft matter. It begins with a substantially revised overview of the underlying physics and chemistry common to soft materials. Subsequent chapters comprehensively address the different classes of soft materials, from liquid crystals to surfactants, polymers, colloids, and biomaterials, with vivid, full-color illustrations throughout.

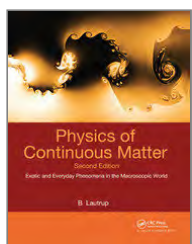
CRC Press
August 2019:304
Hb: 978-1-138-72478-5: £220
Pb: 978-1-138-72444-0: £86.99
eBook: 978-1-315-19238-3

* For full contents and more information, visit: www.routledge.com/9781138724440

2ND EDITION

Physics of Continuous Matter

Exotic and Everyday Phenomena in the Macroscopic World



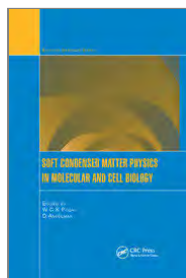
B. Lautrup

This text provides an introduction to the basic ideas of continuum physics and their application to a wealth of macroscopic phenomena. It emphasizes the importance in understanding the physical principles behind equations and the conditions underlying approximations. This edition includes three new chapters on elasticity of slender rods, energy, and entropy. It also offers more illustrations, improved physics arguments and mathematical presentations, and expanded problem sets. Ancillary materials can be found on a companion website. A solutions manual is available for qualifying instructors.

CRC Press
December 2019:696
Hb: 978-1-420-07700-1: £64.99
Pb: 978-0-367-86511-5: £53.99
eBook: 978-0-429-10950-8

* For full contents and more information, visit: www.routledge.com/9780367865115

Soft Condensed Matter Physics in Molecular and Cell Biology



Edited by **W.C.K. Poon, David Andelman**

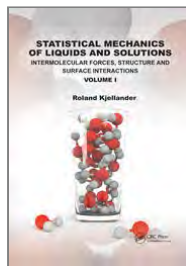
The book provides a thorough grounding in the fundamental nature and properties of soft matter, and then explores its application in biology, especially with regard to DNA investigations, and the study of protein behavior. The final section of the book considers experimental techniques, covering single molecule force spectroscopy of proteins, the use of optical tweezers, and solution scattering.

CRC Press
October 2019:344
Hb: 978-0-750-31023-9: £170
Pb: 978-0-367-39136-2: £59.99
eBook: 978-0-429-14512-4

* For full contents and more information, visit: www.routledge.com/9780367391362

Statistical Mechanics of Liquids and Solutions

Intermolecular Forces, Structure and Surface Interactions Volume I



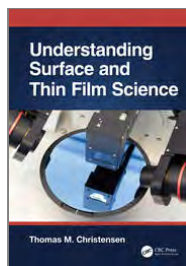
Roland Kjellander

This book shows how you can start from basic laws for the interactions and motions of microscopic particles and calculate how macroscopic systems of these particles behave, thereby explaining properties of matter at the scale that we perceive. Using this microscopic, molecular approach, the text emphasizes clarity of physical explanations for phenomena and mechanisms relevant to fluids, addressing the structure and behavior of liquids and solutions under various conditions. A notable feature is the author's treatment of forces between particles that include nanoparticles, macroparticles, and surfaces.

CRC Press
February 2020:546
Hb: 978-1-482-24401-4: £105
Pb: 978-0-367-47790-5: £44.99
eBook: 978-0-429-19436-8

* For full contents and more information, visit: www.routledge.com/9780367477905

Understanding Surface and Thin Film Science



Thomas M. Christensen

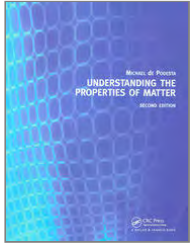
This book is a conceptual overview of surface and thin film science, providing a basic and straightforward understanding of the most common ideas and methods used in these fields. Fundamental scientific ideas, deposition methods and characterization methods are all examined. Thin film science is a natural extension of surface science, especially as applications involve thinner and thinner films; distinct from other literature in the field, this book combines the two topics in a single volume. Simple, conceptual models and figures are used, supported by some mathematical expressions, to convey key ideas to students as well as practicing engineers, scientists, and technicians.

CRC Press
December 2022:372
Hb: 978-1-482-23303-2: £91.99
eBook: 978-0-429-19454-2

* For full contents and more information, visit: www.routledge.com/9781482233032

2ND EDITION

Understanding the Properties of Matter

**Michael de Podesta**

Understanding the Properties of Matter: 2nd Edition is an entertaining and innovative textbook that fulfills the needs of undergraduate physics students and teachers alike. Taking a unique phenomenological approach, this book introduces the properties of matter. After an overview of basic ideas and a reminder of the importance of measurement, the author explores gases, solids, liquids, and phase changes. Students benefit from extensive examples and end-of-chapter exercises, and this edition includes an entire chapter of extended exercises. This approach allows both students and teachers to rediscover a fascination for the subjects that have excited some of the greatest physicists of our age.

CRC Press

April 2002:450

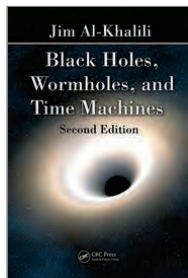
Pb: 978-0-415-25788-6: **£59.99**

eBook: 978-1-315-27475-1

* For full contents and more information, visit: www.routledge.com/9780415257886

2ND EDITION

Black Holes, Wormholes and Time Machines



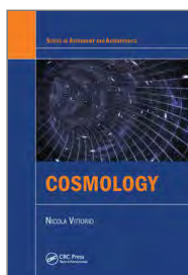
Jim Al-Khalili

While retaining the popular format and style of its best-selling predecessor, this second edition explores the latest developments in high-energy astroparticle physics and Big Bang cosmology. It continues to make the ideas and theories of modern physics easily understood by anyone. Complex concepts, such as quantum mechanics, are explained simply, without the use of scientific jargon. The book takes readers on a journey through space and time, covering space warps, time travel, parallel universes, and other fascinating topics in physics.

CRC Press
December 2011:206
Hb: 978-1-138-40621-6: **£185**
Pb: 978-1-439-88559-8: **£43.99**
eBook: 978-0-429-11313-0

* For **full contents** and more information, visit: www.routledge.com/9781439885598

Cosmology



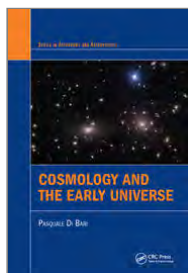
Nicola Vittorio

Modern cosmology has changed significantly over the years, from the discovery to the precision measurement era. The time is right for a fresh new textbook which captures the state-of-the art in cosmology. Written by one of the world's leading cosmologists, this brand new, thoroughly class-tested textbook provides graduate and undergraduate students with coverage of the very latest developments and experimental results in the field. Prof. Nicola Vittorio shows what is meant by precision cosmology, from both theoretical and observational perspectives.

CRC Press
June 2020:454
Hb: 978-1-498-73132-4: **£82.99**
Pb: 978-0-367-57269-3: **£44.99**
eBook: 978-1-315-18139-4

* For **full contents** and more information, visit: www.routledge.com/9780367572693

Cosmology and the Early Universe



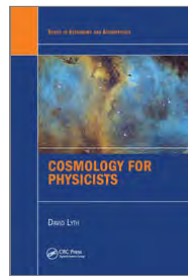
Pasquale Di Bari

This book discusses cosmology from both an observational and a strong theoretical perspective. The first part focuses on gravitation, notably the expansion of the universe and determination of cosmological parameters, before moving onto the main emphasis of the book, the physics of the early universe, and the connections between cosmological models and particle physics. Readers will gain a comprehensive account of cosmology and the latest observational results, without requiring prior knowledge of relativistic theories, making the text ideal for students.

CRC Press
June 2020:259
Hb: 978-1-498-76170-3: **£84.99**
Pb: 978-0-367-57170-2: **£44.99**
eBook: 978-1-138-49690-3

* For **full contents** and more information, visit: www.routledge.com/9780367571702

Cosmology for Physicists



David Lyth

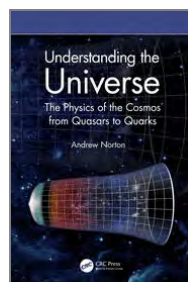
Written by an award-winning cosmologist, this brand new textbook provides advanced undergraduate and graduate students with coverage of the very latest developments in the field. Full treatment of the origin of structure, scalar fields, the cosmic microwave background and the early universe are provided. Problems are included, with solutions in a separate solutions manual. More advanced extension material is offered in the Appendix, ensuring the book is fully accessible to students with a wide variety of background experience.

CRC Press
June 2020:180
Hb: 978-1-498-75531-3: **£82.99**
Pb: 978-0-367-57438-3: **£44.99**
eBook: 978-1-315-36801-6

* For **full contents** and more information, visit: www.routledge.com/9780367574383

Understanding the Universe

The Physics of the Cosmos from Quasars to Quarks



Andrew Norton

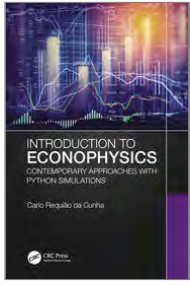
Understanding the Universe: The Physics of the Cosmos from Quasars to Quarks explores how all areas of physics, from the very smallest scales to the very largest, come together to form our current understanding of the Universe. It takes readers on a fascinating journey, from the Big Bang and how the Universe has evolved, to how it appears now, and the possibilities for how it will continue to evolve in the future. It also explores the latest exciting developments in the area and how they impact our understanding of the Universe, such as quantum chromodynamics, black holes, dark energy, and gravitational waves.

CRC Press
May 2023:252
Hb: 978-0-367-74805-0: **£120**
Pb: 978-0-367-75932-2: **£45.99**
eBook: 978-1-003-16466-1

* For **full contents** and more information, visit: www.routledge.com/9780367759322

Introduction to Econophysics

Contemporary Approaches with Python Simulations



Carlo Requião da Cunha

Econophysics explores the parallels between physics and economics and is an exciting topic that is attracting increasing attention.

CRC Press

January 2024: 294

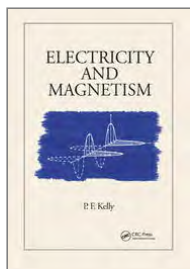
Hb: 978-0-367-64845-9: £84.99

Pb: 978-0-367-65128-2: £45.99

eBook: 978-1-003-12795-6

* For full contents and more information, visit: www.routledge.com/9780367651282

Electricity and Magnetism



P.F. Kelly

This text applies the principles of classical mechanics to reveal the laws governing electric and magnetic phenomena. Exposition of classical electric and magnetic fields is interwoven with analyses of linear electric circuits. Beginning with electric charge, the book culminates in Maxwell's equations, which provide a complete description of classical electromagnetism. With over 450 problems included, it can be used as a primary text, supplement, or exam review.

CRC Press

March 2021:418

Hb: 978-1-482-20635-7: £76.99

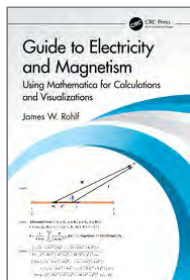
Pb: 978-0-367-78369-3: £45.99

eBook: 978-0-429-17132-1

* For full contents and more information, visit: www.routledge.com/9780367783693

Guide to Electricity and Magnetism

Using Mathematica for Calculations and Visualizations



James W. Rohlif

This is a "how to guide" for a calculus-based introductory course in electricity and magnetism. Students taking the subject at an intermediate or advanced level may also find it to be a useful reference. The calculations are performed in Mathematica, and stress graphical visualization, units, and numerical answers. The techniques show the student how to learn the physics without being hung up on the math.

CRC Press

March 2024:232

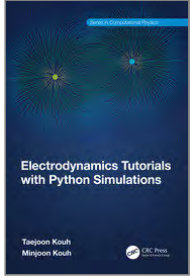
Hb: 978-1-032-64667-1: £110

Pb: 978-1-032-64085-3: £42.99

eBook: 978-1-032-64668-8

* For full contents and more information, visit: www.routledge.com/9781032640853

Electrodynamics Tutorials with Python Simulations



Taejoon Kouh, Minjoon Kouh

Series: Series in Computational Physics

This book provides an accessible introduction to intermediate-level electrodynamics with computational approaches to complement a traditional mathematical treatment of the subject. It covers key topics in electrodynamics, such as electromagnetic fields, forces, potentials, and waves as well as Special Theory of Relativity.

CRC Press

April 2024:294

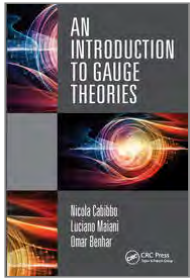
Hb: 978-1-032-49803-4: £115

Pb: 978-1-032-50231-1: £44.99

eBook: 978-1-003-39749-6

* For full contents and more information, visit: www.routledge.com/9781032502311

An Introduction to Gauge Theories



Nicola Cabibbo, Luciano Maiani, Omar Benhar

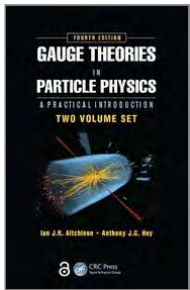
Written by world-leading experts in particle physics, this new book from Luciano Maiani and Omar Benhar, with contributions from the late Nicola Cabibbo, is based on Feynman's path integrals. Key elements of gauge theories are described — Feynman diagrams, gauge-fixing, Faddeev-Popov ghosts — as well as renormalization in Quantum Electrodynamics. Quarks and QCD interactions are introduced. Renormalization group and high momentum behaviour of the coupling constants is discussed in QED and QCD, with asymptotic freedom derived at one-loop. These concepts are related to the Higgs boson and models of grand unification.

CRC Press
June 2020:320
Hb: 978-1-498-73451-6: **£99.99**
Pb: 978-0-367-57340-9: **£44.99**
eBook: 978-1-315-36972-3

* For full contents and more information, visit: www.routledge.com/9780367573409

4TH EDITION

Gauge Theories in Particle Physics: A Practical Introduction, Fourth Edition - 2 Volume set



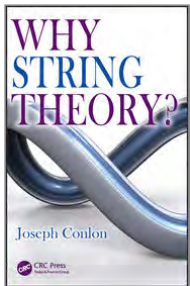
Ian J.R. Aitchison, Anthony J.G. Hey

The fourth edition of this bestselling two-volume set continues to provide a fundamental introduction to advanced particle physics while incorporating substantial new experimental results, especially in the areas of CP violation and neutrino oscillations. It offers an accessible and practical introduction to the three gauge theories included in the Standard Model of particle physics. For each theory, the authors discuss the main conceptual points, detail many practical calculations of physical quantities from first principles, and compare these quantitative predictions with experimental results.

CRC Press
December 2012:960
Hb: 978-1-466-51317-4: **£150**
eBook: 978-1-315-27525-3

* For full contents and more information, visit: www.routledge.com/9781466513174

Why String Theory?



Joseph Conlon

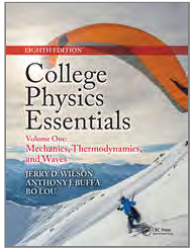
This popular science book offers a highly readable and accessible panorama of the who, what, and why of string theory. The author, a theoretical physics professor at the University of Oxford and a leading string theorist, explains what string theory is and where it originated. He describes how string theory fits into physics and why so many physicists and mathematicians find it appealing when working on topics from M-theory to monsters and from cosmology to superconductors.

CRC Press
November 2015:260
Hb: 978-1-138-42953-6: **£185**
Pb: 978-1-482-24247-8: **£28.99**
eBook: 978-1-315-27236-8

* For full contents and more information, visit: www.routledge.com/9781482242478

College Physics Essentials, Eighth Edition

Mechanics, Thermodynamics, Waves (Volume One)



Jerry D. Wilson, Anthony J. Buffa, Bo Lou

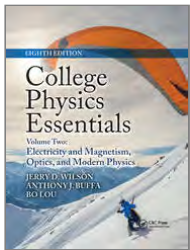
This edition provides a streamlined update of a major textbook for algebra-based physics, reflecting the demand by instructors for more substance. The authors enhance emphasis on worked examples to enhance reader engagement, together with expanded problem sets that build from conceptual understanding to numerical solutions and real-world applications. It is the textbook of choice for those seeking a basic understanding of key physics concepts and how to apply them to real problems. The first volume covers mechanics, solids and fluids, heat, thermodynamics, vibrations and waves, and sound. The second volume covers electricity and magnetism, optics, atomic, nuclear, and quantum physics.

CRC Press
June 2022:408
Hb: 978-1-138-47632-5: **£120**
Pb: 978-1-032-33728-9: **£45.99**
eBook: 978-0-429-32336-2

* For full contents and more information, visit: www.routledge.com/9781032337289

College Physics Essentials, Eighth Edition

Electricity and Magnetism, Optics, Modern Physics (Volume Two)



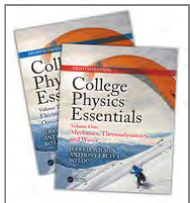
Jerry D. Wilson, Anthony J. Buffa, Bo Lou

This edition provides a streamlined update of a major textbook for algebra-based physics, reflecting the demand by instructors for more substance. The authors enhance emphasis on worked examples to enhance reader engagement, together with expanded problem sets that build from conceptual understanding to numerical solutions and real-world applications. It is the textbook of choice for those seeking a basic understanding of key physics concepts and how to apply them to real problems. The first volume covers mechanics, solids and fluids, heat, thermodynamics, vibrations and waves, and sound. The second volume covers electricity and magnetism, optics, atomic, nuclear, and quantum physics.

CRC Press
June 2022:408
Hb: 978-1-138-47608-0: **£120**
Pb: 978-1-032-33727-2: **£45.99**
eBook: 978-0-429-32337-9

* For full contents and more information, visit: www.routledge.com/9781032337272

College Physics Essentials, Eighth Edition (Two-Volume Set)



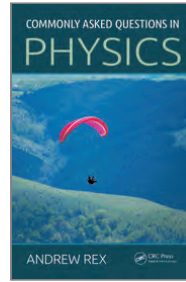
Jerry D. Wilson, Anthony J. Buffa, Bo Lou

This edition provides a streamlined update of a major textbook for algebra-based physics, reflecting the demand by instructors for more substance. The authors enhance emphasis on worked examples to enhance reader engagement, together with expanded problem sets that build from conceptual understanding to numerical solutions and real-world applications. It is the textbook of choice for those seeking a basic understanding of key physics concepts and how to apply them to real problems. The first volume covers mechanics, solids and fluids, heat, thermodynamics, vibrations and waves, and sound. The second volume covers electricity and magnetism, optics, atomic, nuclear, and quantum physics.

CRC Press
July 2022:812
Hb: 978-0-815-35546-5: **£220**
Pb: 978-1-032-33726-5: **£84.99**
eBook: 978-1-351-12992-3

* For full contents and more information, visit: www.routledge.com/9781032337265

Commonly Asked Questions in Physics



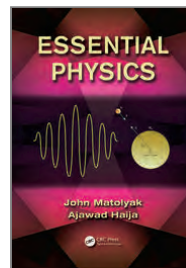
Andrew Rex

Suitable for a wide audience, this book covers a broad scope of subjects, from classical physics that goes back to the age of Newton to new ideas just formulated in the twenty-first century. The book highlights the core areas of physics that predate the twentieth century, including mechanics, electromagnetism, optics, and thermodynamics. It also focuses on modern physics, covering quantum mechanics, atomic and nuclear physics, fundamental particles, and relativity.

CRC Press
February 2014:256
Hb: 978-1-138-42956-7: **£175**
Pb: 978-1-466-56017-8: **£27.99**
eBook: 978-0-429-19405-4

* For full contents and more information, visit: www.routledge.com/9781466560178

Essential Physics



John Matolyak, Ajawad Haija

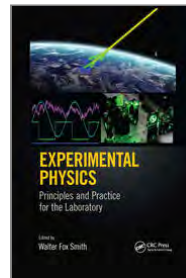
This book is designed for an algebra-based course in physics for non-physics majors and provides a thorough understanding of the fundamentals of essential physics. It omits material often found in much larger texts that cannot be covered in a yearlong course and is not needed for non-physics majors. Instead, this text focuses on providing a solid understanding of fundamental physics and physical principles. Each topic includes worked examples. Math is introduced as necessary, with an emphasis on applications in fields including some biology and chemistry.

CRC Press
December 2013:472
Hb: 978-1-466-57521-9: **£105**
eBook: 978-0-429-10150-2

* For full contents and more information, visit: www.routledge.com/9781466575219

Experimental Physics

Principles and Practice for the Laboratory



Edited by **Walter Fox Smith**

This textbook provides the underlying knowledge and skills needed to understand and utilize the most common and important experimental and data analysis techniques in physics. The reader is presented with the tools to design, assemble, and debug experimental apparatus, and to use it to take meaningful data. The contents start with an introduction to key topics such as troubleshooting, statistical methods, and the scientific method, then progressing through a sequence of experiments that encompass each major subfield of physics. Experiments lay out background theory, procedures and equipment, conceptual questions, safety instructions, examples, and troubleshooting exercises.

CRC Press
June 2022:452
Hb: 978-1-498-77847-3: **£120**
Pb: 978-1-032-33665-7: **£49.99**
eBook: 978-0-429-19489-4

* For full contents and more information, visit: www.routledge.com/9781032336657

Fischer-Cripps Student Companion Set (5 Volumes)



Anthony C. Fischer-Cripps

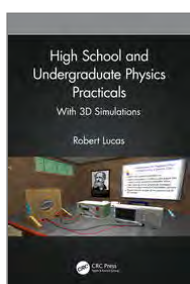
Taking the same signature approach, these books use clear writing and a visual presentation to make the material suitable for students in any country, including those with English as a second language. The author has now extended the coverage of The Physics Companion, The Electronics Companion, The Mathematics Companion, and The Materials Physics Companion and updated them where necessary, building on the outstanding success of the first editions. Along with these volumes, the set contains The Chemistry Companion.

CRC Press
September 2014:NA
Pb: 978-1-498-70967-5: £160

* For full contents and more information, visit: www.routledge.com/9781498709675

High School and Undergraduate Physics Practicals

With 3D Simulations



Robert Lucas

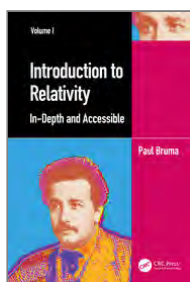
This book describes more than thirty physics practicals at high school and undergraduate levels with background information on each one, a description of the equipment needed, and instructions on how the experiment is performed. Uniquely, for those without access to a real laboratory, the book provides access to highly detailed 3D simulations of all the experiments. Uniquely, for those without access to a real laboratory, the book gives you access to highly detailed 3d simulations of all the experiments.

CRC Press
May 2022:246
Hb: 978-1-032-20129-0: £125
Pb: 978-1-032-19739-5: £48.99
eBook: 978-1-003-26235-0

* For full contents and more information, visit: www.routledge.com/9781032197395

Introduction to Relativity Volume I

In-Depth and Accessible



Paul Bruma

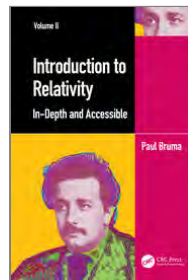
$E=mc^2$ is known as the most famous but least understood equation in physics. This two-volume textbook illuminates this equation and much more through clear and detailed explanations, new demonstrations, a more physical approach, and a deep analysis of the concepts and postulates of Relativity. It fills a gap in the literature by drawing out the physical aspects and consequences of Relativity, which are otherwise often second place to the mathematical aspects. Its concrete focus on physics allows students to gain a full understanding of the underlying concepts and cornerstones of Relativity.

CRC Press
September 2022:262
Hb: 978-1-032-05674-6: £76.99
eBook: 978-1-003-20133-5

* For full contents and more information, visit: www.routledge.com/9781032056746

Introduction to Relativity Volume II

In-Depth and Accessible



Paul Bruma

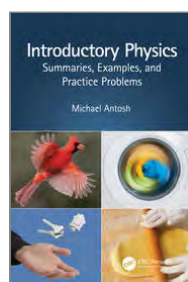
$E=mc^2$ is known as the most famous but least understood equation in physics. This two-volume textbook illuminates this equation and much more through clear and detailed explanations, new demonstrations, a more physical approach, and a deep analysis of the concepts and postulates of Relativity. It fills a gap in the literature by drawing out the physical aspects and consequences of Relativity, which are otherwise often second place to the mathematical aspects. Its concrete focus on physics allows students to gain a full understanding of the underlying concepts and cornerstones of Relativity.

CRC Press
September 2022:286
Hb: 978-1-032-05676-0: £76.99
eBook: 978-1-003-20135-9

* For full contents and more information, visit: www.routledge.com/9781032056760

Introductory Physics

Summaries, Examples, and Practice Problems



Michael Antosh

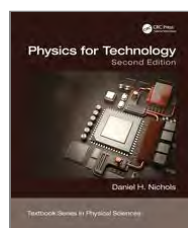
This textbook covers topics related to units, kinematics, forces, energy, momentum, circular and rotational motion, Newton's general equation for gravity, and simple harmonic motion (things that go back and forth). A math review is also included, with a focus on algebra and trigonometry. This book is a very useful study guide for students in introductory physics courses, particularly high school and college students in an algebra-based introductory physics course, and even students in an introductory calculus-level course. It can also be used as a standalone textbook in courses where derivations are not emphasized.

CRC Press
February 2023:408
Hb: 978-0-367-43685-8: £115
Pb: 978-0-367-43423-6: £43.99
eBook: 978-1-003-00504-9

* For full contents and more information, visit: www.routledge.com/9780367434236

2ND EDITION

Physics for Technology, Second Edition



Daniel H. Nichols

This text provides an introduction to the important physics underpinning current technologies, highlighting key concepts in areas that include linear and rotational motion, energy, work, power, heat, temperature, fluids, waves, and magnetism. This revision reflects the latest technology advances, from smart phones to the Internet of Things, and all kinds of sensors. The author also provides more modern worked examples with useful appendices and laboratories for hands-on practice. There are also two brand new chapters covering sensors as well as electric fields and electromagnetic radiation as applied to current technologies.

CRC Press
March 2021:432
Hb: 978-0-815-38292-8: £125
Pb: 978-0-367-78059-3: £45.99
eBook: 978-1-351-20727-0

* For full contents and more information, visit: www.routledge.com/9780367780593

Schrödinger's Web

Race to Build the Quantum Internet



Jonathan P. Dowling

As the race to build the world's first quantum computer is coming to an end, the race to build the quantum internet is has just started. This book leverages the author's unique insights into both the Chinese and American quantum programs. It begins with the physics and history of the quantum internet and ends with the latest results in quantum computing and quantum networks. Written by a renowned quantum physicist, this book is for everyone who is interested in the rapidly advancing field of Quantum Technology — The Second Quantum Revolution.

CRC Press

August 2020:314

Hb: 978-0-367-33761-2: £170

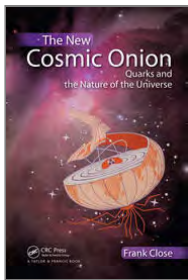
Pb: 978-0-367-32231-1: £34.99

eBook: 978-0-367-33762-9

* For full contents and more information, visit: www.routledge.com/9780367322311

The New Cosmic Onion

Quarks and the Nature of the Universe



Frank Close

Not since Newton's apple has there been a physics phenomenon as deliciously appealing to the masses as Frank Close's Cosmic Onion. Widely embraced by scientists and laypersons alike, the book quickly became an international bestseller, has been translated into seven languages, and propelled the author to become a recognized popular science celebrity around the world. Much has changed since the original publication in 1983, and The New Cosmic Onion was extensively revised and updated to reflect our new view of the universe. Keeping the best contents from the previous work, this new edition includes extensive new material explaining the scientific challenges at the start of this century.

CRC Press

December 2006:232

Hb: 978-1-138-42970-3: £185

Pb: 978-1-584-88798-0: £47.99

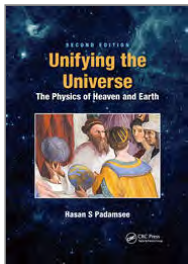
eBook: 978-0-429-13855-3

* For full contents and more information, visit: www.routledge.com/9781584887980

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Hasan S. Padamsee

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CRC Press

September 2021:508

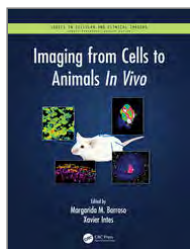
Hb: 978-1-138-38868-0: £84.99

Pb: 978-1-032-17481-5: £45.99

eBook: 978-0-429-42441-0

* For full contents and more information, visit: www.routledge.com/9781032174815

Imaging from Cells to Animals In Vivo



Edited by **Margarida Barroso, Xavier Intes**

Series: *Series in Cellular and Clinical Imaging*

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CRC Press

May 2023:370

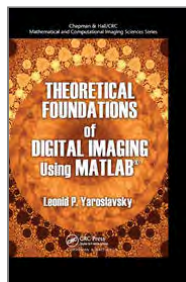
Hb: 978-1-138-04109-7: **£185**

Pb: 978-0-367-56638-8: **£45.99**

eBook: 978-1-315-17466-2

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Leonid P. Yaroslavsky

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CRC Press

September 2020:493

Hb: 978-1-439-86140-0: **£105**

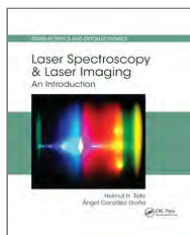
Pb: 978-0-367-86626-6: **£56.99**

eBook: 978-0-429-07415-8

* For full contents and more information, visit: www.routledge.com/9780367866266

Laser Spectroscopy and Laser Imaging

An Introduction



Helmut H. Telle, Ángel González Ureña

Developments in and applications of laser spectroscopy and laser imaging are growing rapidly, specifically now that spectral analytical methodologies are merging with laser imaging techniques. It is the intention of this book to provide researchers, both in industry and academia, with a concise collection of laser analysis and imaging techniques. Written by two leaders in the field, it will introduce the reader to individual techniques in a tutorial-fashion and provide key examples and including details of the latest techniques.

CRC Press

December 2019:750

Hb: 978-1-466-58822-6: **£170**

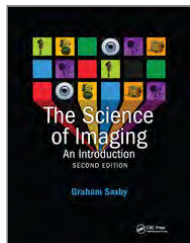
Pb: 978-0-367-86821-5: **£69.99**

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Graham Saxby

Updated and expanded to keep pace with the digital revolution, the new edition of this critically acclaimed work provides a comprehensive exploration of imaging science. Extensively illustrated, the second edition covers the fundamental laws of physics as well as the cutting-edge techniques defining the field. This accessible introduction takes readers on a grand tour of imaging. Starting with the fundamentals of light and basic cameras, the author journeys through television and holography to advanced scientific and medical imaging. He highlights essential formulas, while keeping the complex mathematics to a minimum.

CRC Press

September 2020:352

Hb: 978-1-439-81286-0: **£82.99**

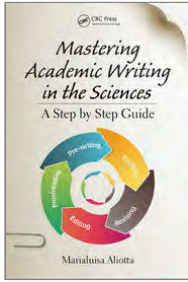
Pb: 978-0-367-86446-0: **£44.99**

eBook: 978-0-429-13191-2

* For full contents and more information, visit: www.routledge.com/9780367864460

Mastering Academic Writing in the Sciences

A Step-by-Step Guide



Marialuisa Aliotta

This book provides a comprehensive and coherent step-by-step guide to writing in scientific academic disciplines. It is an invaluable resource for those working on a PhD thesis, research paper, dissertation, or report. Writing these documents can be a long and arduous experience for students and their supervisors, and even for experienced researchers. However, this book can hold the key to success. Mapping the steps involved in the writing process - from acquiring and organizing sources of information, to revising early drafts, to proofreading the final product - it provides clear guidance on what to write and how best to write it.

CRC Press

April 2018:200

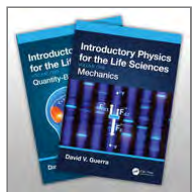
Hb: 978-1-138-74288-8: **£115**

Pb: 978-1-498-70147-1: **£46.99**

eBook: 978-1-351-00214-1

* For full contents and more information, visit: www.routledge.com/9781498701471

Introductory Physics for the Life Sciences - Two-Vol. Set



David V. Guerra

This textbook provides an accessible introduction to physics for undergraduate students in the life sciences, including those majoring in all branches of biology, biochemistry, and psychology and students working on pre-professional programs such as pre-medical, pre-dental, and physical therapy. The text is geared for the algebra-based physics course, often named College Physics in the United States. The order of topics studied are such that most of the problems in the text can be solved with the methods of Statics or Dynamics. That is, they require a free body diagram, the application of Newton's Laws, and any necessary kinematics.

CRC Press

June 2023:932

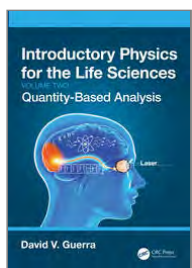
Hb: 978-1-032-49091-5: £230

Pb: 978-1-032-49093-9: £89.99

* For full contents and more information, visit: www.routledge.com/9781032490939

Introductory Physics for the Life Sciences: (Volume 2)

Quantity-Based Analysis



David V. Guerra

This textbook provides an accessible introduction to physics for undergraduate students in the life sciences, including those majoring in all branches of biology, biochemistry, and psychology and students working on pre-professional programs such as pre-medical, pre-dental, and physical therapy. The text is geared for the algebra-based physics course, often named College Physics in the United States. The order of topics studied in this volume require students to first understand a concept, such as the conservation of energy, momentum, voltage, or current, the change in a quantity such as entropy, or the rules of ray and wave optics.

CRC Press

June 2023:288

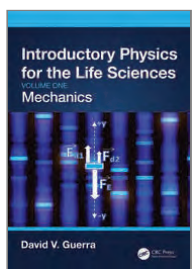
Hb: 978-1-032-30041-2: £135

Pb: 978-1-032-31108-1: £54.99

eBook: 978-1-003-30807-2

* For full contents and more information, visit: www.routledge.com/9781032311081

Introductory Physics for the Life Sciences: Mechanics (Volume One)



David V. Guerra

This textbook provides an accessible introduction to physics for undergraduate students in the life sciences, including those majoring in all branches of biology, biochemistry, and psychology and students working on pre-professional programs such as pre-medical, pre-dental, and physical therapy. The text is geared for the algebra-based physics course, often named College Physics in the United States. The order of topics studied are such that most of the problems in the text can be solved with the methods of Statics or Dynamics. That is, they require a free body diagram, the application of Newton's Laws, and any necessary kinematics.

CRC Press

May 2023:258

Hb: 978-1-032-30040-5: £135

Pb: 978-1-032-31106-7: £54.99

eBook: 978-1-003-30806-5

* For full contents and more information, visit: www.routledge.com/9781032311067

2ND EDITION

Fundamentals of Fibre Reinforced Composite Materials



A.R. Bunsell, S. Joannès, A. Thionnet

Series: Series in Materials Science and Engineering

This second edition of *Fundamentals of Fibre Reinforced Composite Materials* has been fully updated throughout, providing an authoritative and modern introduction to the topic with a brief history of composite development, a review of composite applications, manufacture and markets, types of fibres and matrices used, and their properties with a detailed introduction into the computer simulation of composite behaviour.

CRC Press

September 2022:360

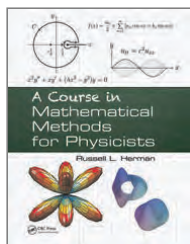
Hb: 978-0-367-02373-7: **£115**

Pb: 978-0-367-74433-5: **£44.99**

eBook: 978-0-429-39990-9

* For full contents and more information, visit: www.routledge.com/9780367744335

A Course in Mathematical Methods for Physicists



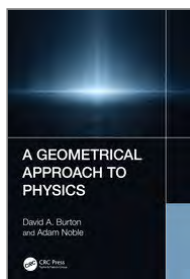
Russell L. Herman

Based on the author's junior-level undergraduate course, this classroom-tested textbook is designed for an introductory one-semester course in mathematical physics. Focusing on the physics of oscillations and waves, it helps students understand the mathematical techniques needed for their future studies in physics. The book introduces the methods while studying one underlying theme from physics. It takes a bottom-up approach that emphasizes physical applications of the mathematics.

CRC Press
December 2013:776
Hb: 978-1-138-44208-5: £180
Pb: 978-1-466-58467-9: £69.99
eBook: 978-0-429-08891-9

* For full contents and more information, visit: www.routledge.com/9781466584679

A Geometrical Approach to Physics



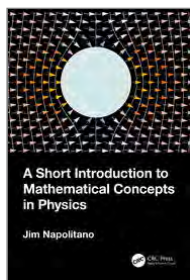
David A. Burton, Adam Noble

The purpose of the book is to act as a 'gateway' to more advanced books on the applications of differential geometry in physics. It will also help the reader to better appreciate modern physics research that makes use of differential geometry, and the common features that permeate the discipline as a whole.

CRC Press
March 2024:202
Hb: 978-1-032-13380-5: £115
Pb: 978-1-032-12928-0: £44.99
eBook: 978-1-003-22894-3

* For full contents and more information, visit: www.routledge.com/9781032129280

A Short Introduction to Mathematical Concepts in Physics



Jim Napolitano

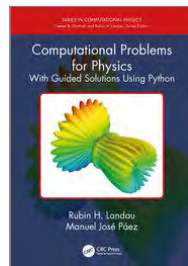
Mathematics is the language of physics and yet, mathematics is an enormous subject. This textbook provides an accessible and concise introduction to mathematical physics for undergraduate students taking a one semester course. It assumes the reader has studied a year of introductory physics and three semesters of basic calculus, including some vector calculus, but no formal training in differential equations or matrix algebra. It equips readers with the skills and foundational knowledge they need for courses that follow in classical mechanics, electromagnetism, quantum mechanics, and thermal physics.

CRC Press
January 2024:242
Hb: 978-1-032-40977-1: £130
Pb: 978-1-032-40430-1: £49.99
eBook: 978-1-003-35565-6

* For full contents and more information, visit: www.routledge.com/9781032404301

Computational Problems for Physics

With Guided Solutions Using Python



Rubin H. Landau, Manuel José Páez

Series: Series in Computational Physics

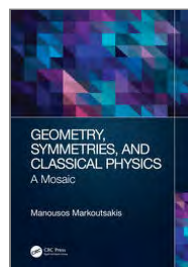
Our future scientists and professionals must be conversant in computational techniques. In order to facilitate integration of computer methods into existing physics courses, this textbook offers a large number of worked examples and problems with fully guided solutions in Python as well as other languages (Mathematica, Java, C, Fortran, and Maple) on the Web. It's also intended as a self-study guide for learning how to use computer methods in physics. The authors include an introductory chapter on numerical tools and indication of computational as well as a separate chapter with problems for beginning students.

CRC Press
June 2018:430
Hb: 978-1-138-70591-3: £105
Pb: 978-1-138-70541-8: £69.99
eBook: 978-1-315-20209-9

* For full contents and more information, visit: www.routledge.com/9781138705418

Geometry, Symmetries, and Classical Physics

A Mosaic



Manousos Markoutsakis

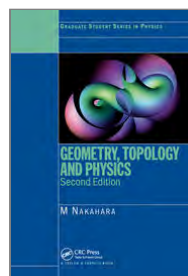
This book provides advanced undergraduate physics and mathematics students with an accessible yet detailed understanding of the fundamentals of differential geometry and symmetries in classical physics.

CRC Press
January 2024:482
Hb: 978-0-367-53523-0: £130
Pb: 978-0-367-54141-5: £44.99
eBook: 978-1-003-08774-8

* For full contents and more information, visit: www.routledge.com/9780367541415

2ND EDITION

Geometry, Topology and Physics



Mikio Nakahara

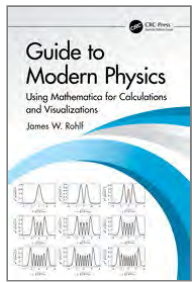
This book provides an introduction to the ideas and techniques of differential geometry and topology. It starts with a brief survey of quantum field theory, gauge theory, general relativity, vector spaces, and topology. Using many illustrations, exercises, and problems, the author demonstrates more elaborate concepts of topology and geometry, including fiber bundles, characteristic classes, and index theorems. New to this second edition is the proof of the index theorem in terms of supersymmetric quantum mechanics. The final two chapters examine anomalies in gauge field theories and the analysis of Polakov's bosonic string theory from the geometrical point of view.

CRC Press
June 2003:596
Hb: 978-1-138-41336-8: £185
Pb: 978-0-750-30606-5: £84.99
eBook: 978-1-315-27582-6

* For full contents and more information, visit: www.routledge.com/9780750306065

Guide to Modern Physics

Using Mathematica for Calculations and Visualizations



James W. Rohlf

This is a "how to guide" for making beginning calculations in modern physics. The academic level is second year college physical science and engineering students. The calculations are performed in Mathematica, and stress graphical visualization, units, and numerical answers.

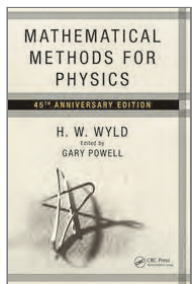
CRC Press
November 2023:218
Hb: 978-1-032-49801-0: £110
Pb: 978-1-032-49686-3: £42.99
eBook: 978-1-003-39551-5

* For full contents and more information, visit: www.routledge.com/9781032496863

2ND EDITION

Mathematical Methods for Physics

45th anniversary edition



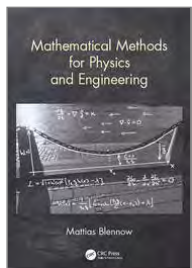
H.W. Wyld, Gary Powell

From classical mechanics and classical electrodynamics to modern quantum mechanics many physical phenomena are formulated in terms of similar partial differential equations while boundary conditions determine the specifics of the problem. Mathematical Methods for Physics demonstrates how many physics problems resolve into similar inhomogeneous partial differential equations and the mathematical techniques for solving them.

CRC Press
May 2022:476
Hb: 978-0-367-47708-0: £120
Pb: 978-0-367-47973-2: £49.99
eBook: 978-1-003-03746-0

* For full contents and more information, visit: www.routledge.com/9780367479732

Mathematical Methods for Physics and Engineering



Mattias Blennow

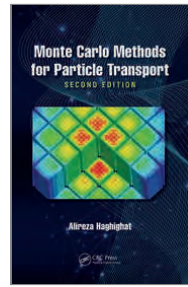
Suitable for advanced undergraduate and graduate students, this new textbook contains an introduction to the mathematical concepts used in physics and engineering. The entire book is unique in that it draws upon applications from physics, rather than mathematical examples, to ensure students are fully equipped with the tools they need. This approach prepares the reader for advanced topics, such as quantum mechanics and general relativity, while offering examples, problems, and insights into classical physics. The book is also distinctive in the coverage it devotes to modelling, and to oft-neglected topics such as Green's functions.

CRC Press
December 2017:760
Hb: 978-1-138-05690-9: £250
Pb: 978-1-138-05688-6: £105
eBook: 978-1-315-16509-7

* For full contents and more information, visit: www.routledge.com/9781138056886

2ND EDITION

Monte Carlo Methods for Particle Transport



Alireza Haghghat

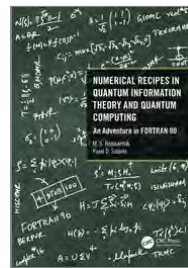
Fully updated with the latest developments in the eigenvalue Monte Carlo calculations and automatic variance reduction techniques and containing an entirely new chapter on fission matrix and alternative hybrid techniques. This second edition explores the uses of the Monte Carlo method for real-world applications, explaining its concepts and limitations.

CRC Press
April 2022:310
Hb: 978-0-367-18805-4: £120
Pb: 978-0-367-53809-5: £49.99
eBook: 978-0-429-19839-7

* For full contents and more information, visit: www.routledge.com/9780367538095

Numerical Recipes in Quantum Information Theory and Quantum Computing

An Adventure in FORTRAN 90



M.S. Ramkarthik, Payal D. Solanki

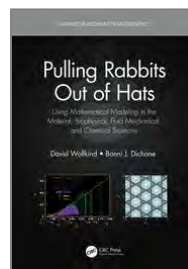
This first of a kind textbook provides computational tools in Fortran 90 that are fundamental to quantum information, quantum computing, linear algebra and one dimensional spin half condensed matter systems. Over 160 subroutines are included, and the numerical recipes are aided by detailed flowcharts. Suitable for beginner and advanced readers alike, students and researchers will find this textbook to be a helpful guide and a compendium.

CRC Press
September 2021:424
Hb: 978-0-367-75928-5: £94.99
eBook: 978-1-003-16467-8

* For full contents and more information, visit: www.routledge.com/9780367759285

Pulling Rabbits Out of Hats

Using Mathematical Modeling in the Material, Biophysical, Fluid Mechanical, and Chemical Sciences



David Wollkind, Bonni J. Dichone

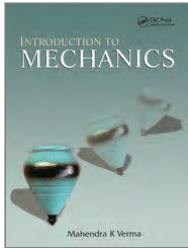
Series: Advances in Biochemistry and Biophysics

Pulling Rabbits Out of Hats: Using Mathematical Modeling in the Material, Biophysical, Fluid Mechanical, and Chemical Sciences focuses on those assumptions made during applied mathematical modeling in which the phenomenological data and the model predictions are self-consistent. This comprehensive reference demonstrates how to employ a variety of mathematical techniques to quantify a number of problems from the material, biophysical, fluid mechanical, and chemical sciences. In doing so, methodology of modelling, analysis, and result generation are all covered.

CRC Press
November 2021:554
Hb: 978-1-032-04787-4: £180
eBook: 978-1-003-19560-3

* For full contents and more information, visit: www.routledge.com/9781032047874

Introduction to Mechanics



Mahendra K. Verma

A modern introduction to Newtonian dynamics and the basics of special relativity, this book discusses standard topics such as Newton's laws of motion, energy, linear and angular momentum, rigid body dynamics, and oscillations, then goes on to introduce modern topics such as symmetries, phase space, nonlinear dynamics and chaos. The author presents Newton's equation of motion as a differential equation, bringing out key issues such as phase space and determinism in mechanical systems and helps introduce modern research topics such as chaos theory in a natural way. He highlights key assumptions of Newtonian mechanics and incorporates numerical solutions of many mechanical systems using MATLAB®.

CRC Press

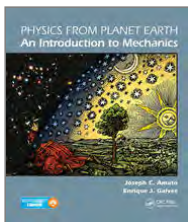
January 2019:356

Hb: 978-1-439-80127-7: **£52.99**

Pb: 978-1-138-11677-1: **£18.99**

* For full contents and more information, visit: www.routledge.com/9781138116771

Physics from Planet Earth - An Introduction to Mechanics



Joseph C. Amato, Enrique J. Galvez

This classroom-tested text provides a one-semester, calculus-based introduction to classical mechanics for first-year undergraduate students. The authors introduce the three conservation laws as fundamental laws of nature from which secondary concepts are derived and organize topics around the conservation laws. They also illustrate many topics through real, contemporary applications in astronomy, planetary science, and space travel. The book includes short exercises throughout the text as well as novel problems at the end of each chapter.

CRC Press

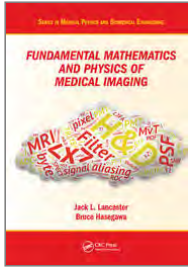
June 2015:612

Hb: 978-1-439-86783-9: **£86.99**

eBook: 978-0-429-19447-4

* For full contents and more information, visit: www.routledge.com/9781439867839

Fundamental Mathematics and Physics of Medical Imaging



Jack Lancaster, Bruce Hasegawa

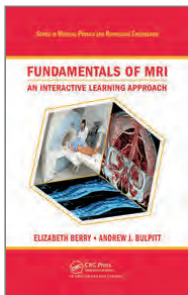
Authored by a leading educator, this book is ideal for graduate medical imaging courses. Rather than focus on imaging modalities, the book delves into the mechanisms of image formation and image quality common to all imaging systems: contrast mechanisms, noise, and spatial and temporal resolution. This is an extensively revised new edition of *The Physics of Medical X-Ray Imaging* by Bruce Hasegawa (Medical Physics Publishing, 1991). A wide range of modalities are covered including X-ray CT, MRI and SPECT.

CRC Press
June 2020:346
Hb: 978-1-498-75161-2: **£84.99**
Pb: 978-0-367-57452-9: **£44.99**
eBook: 978-1-315-36821-4

* For full contents and more information, visit: www.routledge.com/9780367574529

Fundamentals of MRI

An Interactive Learning Approach



Elizabeth Berry, Andrew J. Bulpitt

Series: Series in Medical Physics and Biomedical Engineering

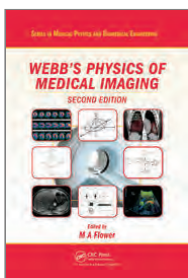
This interactive workbook provides a practical, self-contained introduction to the principles of MRI. Shaped by the authoritative experience of the authors, the book presents the fundamentals of MRI, while an accompanying CD offers animations and exercises that will help students develop a deeper understanding of the physical principles of MRI in practice. The text includes a number of exercises and worked examples with detailed solutions. It provides advanced students studying medical physics, radiologists, radiographers, and clinicians with a pragmatic approach to MRI that builds a solid foundation for further practice and study.

CRC Press
December 2008:316
Hb: 978-1-584-88901-4: **£82.99**
eBook: 978-0-429-14342-7

* For full contents and more information, visit: www.routledge.com/9781584889014

2ND EDITION

Webb's Physics of Medical Imaging



Edited by M Flower

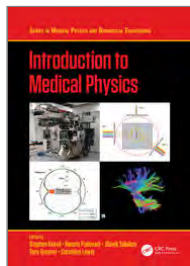
Series: Series in Medical Physics and Biomedical Engineering

Since the publication of the best-selling first edition, the technology and clinical applications of medical imaging have changed significantly. Gathering these developments into one volume, this comprehensive second edition presents the basic physics, modern technology, and up-to-date examples of clinical application across all the modalities of medical imaging for undergraduate and graduate students studying medicine and medical physics. It now covers state-of-the-art detector technology and computer processing used in medical imaging. Along with many new examples and figures, this edition includes new chapters on medical image processing and multimodality imaging.

CRC Press
June 2012:864
Hb: 978-0-750-30573-0: **£86.99**
eBook: 978-0-429-09957-1

* For full contents and more information, visit: www.routledge.com/9780750305730

Introduction to Medical Physics



Edited by **Stephen Keevil, Renato Padovani, Slavik Tabakov, Tony Greener, Cornelius Lewis**

Series: *Series in Medical Physics and Biomedical Engineering*

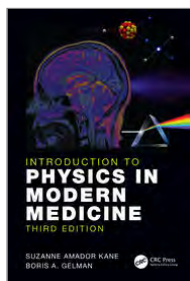
This textbook provides an accessible introduction to the basic principles of medical physics, the applications of medical physics equipment, and the role of a medical physicist in healthcare.

CRC Press
January 2022:500
Hb: 978-1-498-74479-9: **£84.99**
eBook: 978-0-429-15575-8

* For full contents and more information, visit: www.routledge.com/9781498744799

3RD EDITION

Introduction to Physics in Modern Medicine



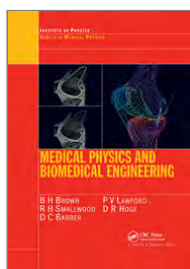
Suzanne Amador Kane, Boris A. Gelman

Covering a wide range of applications, this third edition builds on the bestselling second edition, providing medical personnel and students with an exploration of the physics-related applications found in state-of-the-art medical centers. Requiring no previous knowledge of physics, biology, or chemistry and keeping maths to a minimum, the application-dedicated chapters adhere to simple and self-contained qualitative explanations that make use of examples and illustrations. With an enhanced emphasis on digital imaging and computers in medicine, the text gives readers a fundamental understanding of the practical application of each concept and the basic science behind it.

CRC Press
March 2020:450
Hb: 978-1-138-74263-5: **£175**
Pb: 978-1-138-03603-1: **£58.99**
eBook: 978-1-315-23208-9

* For full contents and more information, visit: www.routledge.com/9781138036031

Medical Physics and Biomedical Engineering



B.H Brown, R.H Smallwood, D.C. Barber, P.V Lawford, D.R Hose

Series: *Series in Medical Physics and Biomedical Engineering*

Appropriate for senior undergraduates and graduates, this text presents the underlying physics, electronics, anatomy, and physiology as well as addresses practical applications. The structured approach of the text builds and broadens the material of opening chapters in the later chapters. The book covers biomechanics, image formation techniques, biomedical devices, physiological signals and responses, and respiratory and cardiovascular function and measurement. It includes chapter problems with short questions to test understanding of the main principles and longer questions to test more in-depth knowledge, along with detailed bibliographies that provide references to introductory texts and research materials.

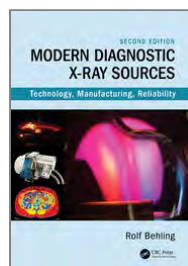
CRC Press
January 1998:762
Pb: 978-0-750-30368-2: **£94.99**
eBook: 978-1-315-27560-4

* For full contents and more information, visit: www.routledge.com/9780750303682

2ND EDITION

Modern Diagnostic X-Ray Sources

Technology, Manufacturing, Reliability



Rolf Behling

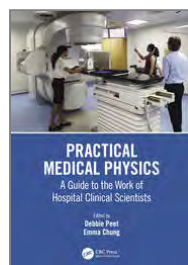
Now fully updated the second edition of *Modern Diagnostic X-Ray Sources: Technology, Manufacturing, Reliability* gives an up-to-date summary of X-ray source design for applications in modern diagnostic medical imaging. It lays a sound groundwork for education and advanced training in the physics of X-ray production, X-ray interactions with matter, imaging modalities, and assesses their prospects. The book begins with a historical overview of X-ray tube and generator development, including key achievements leading up to the current technological and economic state of the field.

CRC Press
May 2023:412
Hb: 978-0-367-54692-2: **£155**
Pb: 978-0-367-55845-1: **£61.99**
eBook: 978-1-003-09540-8

* For full contents and more information, visit: www.routledge.com/9780367558451

Practical Medical Physics

A Guide to the Work of Hospital Clinical Scientists



Edited by **Debbie Peet, Emma Chung**

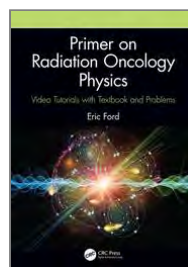
This is the first all-encompassing textbook designed to support trainee clinical scientists in medical physics as they start work in a hospital setting whilst undertaking an academic master's course.

CRC Press
August 2021:262
Hb: 978-1-138-30982-1: **£135**
Pb: 978-1-138-30753-7: **£49.99**
eBook: 978-1-315-14242-5

* For full contents and more information, visit: www.routledge.com/9781138307537

Primer on Radiation Oncology Physics

Video Tutorials with Textbook and Problems



Eric Ford

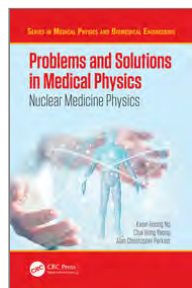
Gain mastery over the fundamentals of radiation oncology physics! This package gives you over 60 tutorial videos (each 15- 20 minutes in length) with a companion text, providing the most complete and effective introduction available. Dr. Ford has tested this approach in formal instruction for years with outstanding results. The text includes extensive problem sets for each chapter with detailed solutions provided for instructors. The videos include embedded quizzes and 'whiteboard' screen technology to facilitate comprehension. Together, this provides a valuable learning tool both for training purposes and as a refresher for those in practice.

CRC Press
May 2020:374
Hb: 978-1-138-59438-8: **£215**
Pb: 978-1-138-59170-7: **£84.99**
eBook: 978-0-429-48888-7

* For full contents and more information, visit: www.routledge.com/9781138591707

Problems and Solutions in Medical Physics

Nuclear Medicine Physics



Kwan Hoong Ng, Chai Hong Yeong, Alan Perkins

Series: Series in Medical Physics and Biomedical Engineering

The second in a three-volume set exploring Problems and Solutions in Medical Physics, this volume explores common questions and their solutions in Nuclear Medicine. This invaluable study guide should be used in conjunction with other key textbooks in the field to provide additional learning opportunities. Topics include radioactivity and nuclear transformation, radionuclide production and radiopharmaceuticals, instrumentation for gamma imaging, SPECT and PET/CT, radionuclide therapy, internal radiation dosimetry, and quality control and radiation protection in nuclear medicine. Each chapter provides examples, notes, and references for further reading to enhance understanding.

CRC Press

March 2019:163

Hb: 978-0-367-14797-6: **£130**

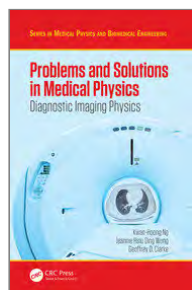
Pb: 978-1-482-24000-9: **£56.99**

eBook: 978-1-482-24001-6

* For full contents and more information, visit: www.routledge.com/9781482240009

Problems and Solutions in Medical Physics

Diagnostic Imaging Physics



Kwan Hoong Ng, Jeannie Hsiu Ding Wong, Geoffrey Clarke

Series: Series in Medical Physics and Biomedical Engineering

The first in a three-volume set exploring Problems and Solutions in Medical Physics, this volume explores common questions and their solutions in Diagnostic Imaging. This invaluable study guide should be used in conjunction with other key textbooks in the field to provide additional learning opportunities. It contains key imaging modalities, exploring X-ray, mammography, and fluoroscopy, in addition to computed tomography, magnetic resonance imaging, and ultrasonography. Each chapter provides examples, notes, and references for further reading to enhance understanding.

CRC Press

May 2018:156

Hb: 978-1-138-54258-7: **£140**

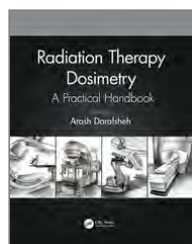
Pb: 978-1-482-23995-9: **£51.99**

eBook: 978-1-351-00678-1

* For full contents and more information, visit: www.routledge.com/9781482239959

Radiation Therapy Dosimetry

A Practical Handbook



Edited by Arash Darafsheh

This comprehensive book covers the everyday use and underlying principles of radiation dosimeters used in radiation oncology clinics. It provides an up-to-date reference spanning the full range of current modalities with emphasis on practical know-how. The main audience is medical physicists, radiation oncology physics residents, and medical physics graduate students. The reader gains the necessary tools for determining which detector is best for a given application. Dosimetry of cutting edge techniques from radiosurgery to MRI-guided systems to small fields and proton therapy are all addressed.

CRC Press

May 2023:504

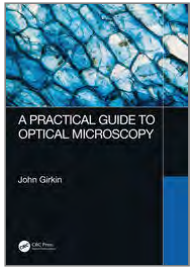
Hb: 978-1-138-54397-3: **£215**

Pb: 978-0-367-68677-2: **£76.99**

eBook: 978-1-351-00538-8

* For full contents and more information, visit: www.routledge.com/9780367686772

A Practical Guide to Optical Microscopy



John Girkin

This book is aimed at providing users with a practical guide to help them select, and then use, the most suitable method for their application. It explores the principles behind the different forms of optical microscopy, without the use of complex maths, to provide an understanding to help the user utilise a specific method and then interpret the results. This book is an invaluable tool for use within research groups and laboratories in the life and physical sciences, acting as a first source for practical information to guide less experienced users (or those new to a particular methodology) on the range of techniques available.

CRC Press

July 2019: 278

Hb: 978-1-138-06506-2: **£190**

Pb: 978-1-138-06470-6: **£77.99**

eBook: 978-1-315-11535-1

* For full contents and more information, visit: www.routledge.com/9781138064706

21st Century Nanoscience

A Handbook (Ten-Volume Set)



Edited by **Klaus D. Sattler**

Series: *21st Century Nanoscience*

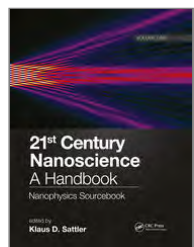
This up-to-date reference is the most comprehensive summary of the field of nanoscience and its applications. It begins with fundamental properties at the nanoscale and then goes well beyond into the practical aspects of the design, synthesis, and use of nanomaterials in various industries. It emphasizes the vast strides made in the field over the past decade – the chapters focus on new, promising directions as well as emerging theoretical and experimental methods. The contents incorporate experimental data and graphs where appropriate, as well as supporting tables and figures with a tutorial approach.

CRC Press
December 2020:4142
Hb: 978-0-815-36578-5: **£1550**
eBook: 978-1-351-26056-5

* For full contents and more information, visit: www.routledge.com/9780815365785

21st Century Nanoscience – A Handbook

Nanophysics Sourcebook (Volume One)



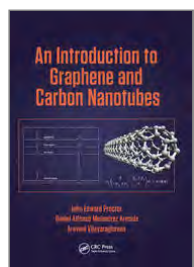
Edited by **Klaus D. Sattler**

This up-to-date reference is the most comprehensive summary of the field of nanoscience and its applications. It begins with fundamental properties at the nanoscale and then goes well beyond into the practical aspects of the design, synthesis, and use of nanomaterials in various industries. It emphasizes the vast strides made in the field over the past decade – the chapters focus on new, promising directions as well as emerging theoretical and experimental methods.

CRC Press
June 2022:372
Hb: 978-0-815-38443-4: **£115**
Pb: 978-1-032-33731-9: **£44.99**
eBook: 978-0-367-33300-3

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An Introduction to Graphene and Carbon Nanotubes



John E. Proctor, Daniel Melendrez Armada, Aravind Vijayaraghavan

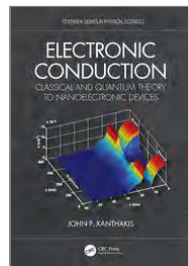
Carbon nanotubes and graphene have been the subject of intense scientific research since their relatively recent discoveries. This book introduces the reader to the science behind these rapidly developing fields, and covers both the fundamentals and latest advances. Suitable for undergraduate students with a working knowledge of basic quantum mechanics, and for postgraduate researchers commencing their studies into the field, this book will equip the reader to critically evaluate the physical properties and potential for applications of graphene and carbon nanotubes.

CRC Press
June 2020:302
Hb: 978-1-498-75179-7: **£82.99**
Pb: 978-0-367-57390-4: **£44.99**
eBook: 978-1-315-36819-1

* For full contents and more information, visit: www.routledge.com/9780367573904

Electronic Conduction

Classical and Quantum Theory to Nanoelectronic Devices



John P. Xanthakis

Series: *Textbook Series in Physical Sciences*

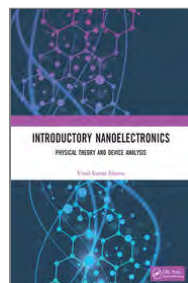
This book provides a concise, complete introduction to the fundamental principles of electronic conduction in microelectronic and nanoelectronic devices, with an emphasis on integrating the quantum aspects of conduction. The chapter coverage begins by presenting the classical theory of conduction, including introductory chapters on quantum mechanics and the solid state, then moving to a complete presentation of essential theory for understanding modern electronic devices. The author's unique approach is applicable to microscale and nanoscale device simulation, is particularly timely given the explosion in the nanoelectronics field.

CRC Press
May 2023:310
Hb: 978-1-138-58386-3: **£120**
Pb: 978-0-367-63919-8: **£45.99**
eBook: 978-0-429-50644-4

* For full contents and more information, visit: www.routledge.com/9780367639198

Introductory Nanoelectronics

Physical Theory and Device Analysis



Vinod Kumar Khanna

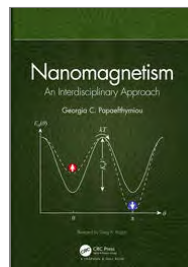
This introductory text develops the reader's fundamental understanding of core principles and experimental aspects underlying the operation of nanoelectronic devices. The author makes a thorough and systematic presentation of electron transport in quantum-confined systems such as quantum dots, quantum wires and quantum wells together with Landauer-Büttiker formalism and non-equilibrium Green's function approach. The writing throughout is straightforward and accessible, with clearly drawn illustrations and extensive self-study exercises for each chapter.

CRC Press
April 2022:446
Hb: 978-0-815-38426-7: **£115**
Pb: 978-0-367-50403-8: **£39.99**
eBook: 978-1-351-20467-5

* For full contents and more information, visit: www.routledge.com/9780367504038

Nanomagnetism

An Interdisciplinary Approach



Georgia C. Papaefthymiou

This book provides a core foundation for understanding magnetic quantum-size effects at the nanoscale and their many applications across the disciplines. This textbook will be a valuable guide for students in new interdisciplinary courses in nanomagnetism and magnetic nanomaterials, an area that has experienced immense growth in the last two decades due to advancements in sample preparation, nano patterning techniques and magnetic measurement instrumentation.

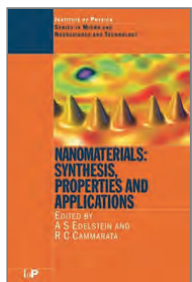
Chapman & Hall
April 2022:436
Hb: 978-1-439-81846-6: **£89.99**
eBook: 978-1-315-15701-6

* For full contents and more information, visit: www.routledge.com/9781439818466

2ND EDITION

Nanomaterials

Synthesis, Properties and Applications, Second Edition



Edited by **A.S. Edelstein, R.C. Cammarata**

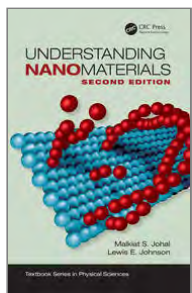
Nanomaterials: Synthesis, Properties and Applications provides a comprehensive introduction to nanomaterials, from how to make them to example properties, processing techniques, and applications. Contributions by leading international researchers and teachers in academic, government, and industrial institutions in nanomaterials provide an accessible guide for newcomers to the field. The coverage ranges from isolated clusters and small particles to nanostructured materials, multilayers, and nanoelectronics. The book contains a wealth of references for further reading. Individual chapters deal with relevant aspects of the underlying physics, materials science, and physical chemistry.

CRC Press
January 1998:618
Hb: 978-0-750-30578-5: **£170**
eBook: 978-0-429-18126-9

* For full contents and more information, visit: www.routledge.com/9780750305785

2ND EDITION

Understanding Nanomaterials



Malkiat S. Johal, Lewis E. Johnson

Series: *Textbook Series in Physical Sciences*

The authors provide the perfect training tool for the workforce in nanotech development by presenting the fundamental principles that govern the fabrication, characterization, and application of nanomaterials. This edition represents a complete overhaul, giving a much more complete, self-contained introduction. As before, the text avoids excessive mathematical detail and is written in an easy to follow, appealing style suitable for anyone, regardless of background in physics, chemistry, engineering, or biology. The organization has been revised to include fundamental physical chemistry and physics pertaining to relevant electrical, mechanical, and optical material properties.

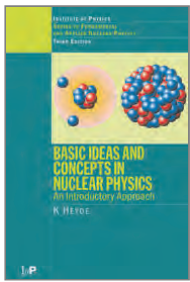
CRC Press
April 2018:528
Hb: 978-0-815-35438-3: **£150**
Pb: 978-1-482-25322-1: **£82.99**
eBook: 978-1-315-15693-4

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Basic Ideas and Concepts in Nuclear Physics

An Introductory Approach, Third Edition

**K. Heyde**

The third edition of a classic book, this text sets out in a clear and consistent manner the various elements of nuclear physics. Divided into four main parts: the constituents and characteristics of the nucleus; nuclear interactions, including the strong, weak and electromagnetic forces; an introduction to nuclear structure; and recent developments in nuclear structure research, the book delivers a balanced account of both theoretical and experimental nuclear physics. In addition to the numerous revisions and updates to the previous edition to capture the developments in the subject over the last five years, the book contains a new chapter on the structure and stability of very light nuclei.

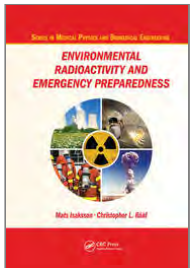
CRC Press

July 2004:668

Hb: 978-1-138-40638-4: £180

Pb: 978-0-750-30980-6: £86.99

eBook: 978-0-367-80657-6

* For full contents and more information, visit: www.routledge.com/9780750309806**Environmental Radioactivity and Emergency Preparedness****Mats Isaksson, Christopher L. Raaf**

The book explores how to deal with the threats posed by different radiological sources, including those that are lost or hidden, and the issues posed by the use of such sources. It presents measurement methods and approaches to model and quantify the extent of threat, and also presents strategies for emergency preparedness, such as strategies for first-responders and radiological triage in case an accident should happen.

CRC Press

June 2020:656

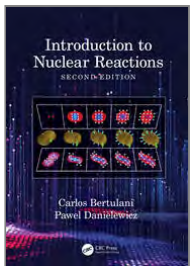
Hb: 978-1-482-24464-9: £99.99

Pb: 978-0-367-57402-4: £44.99

eBook: 978-1-315-37287-7

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2ND EDITION

Introduction to Nuclear Reactions**Carlos Bertulani, Pawel Danielewicz**

Until the publication of the first edition of Introduction to Nuclear Reactions in 2004, an introductory reference on nuclear reactions had been unavailable. Now, fully updated throughout, this second edition continues to provide an authoritative overview of nuclear reactions. It discusses the main formalisms, ranging from basic laws to the final formulae used in academic research to calculate measurable quantities.

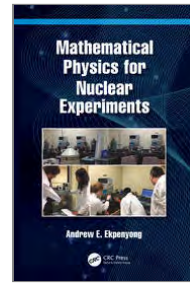
CRC Press

September 2022:420

Hb: 978-0-367-35362-9: £135

Pb: 978-0-367-34993-6: £45.99

eBook: 978-0-429-33106-0

* For full contents and more information, visit: www.routledge.com/9780367349936**Mathematical Physics for Nuclear Experiments****Andrew E. Ekpenyong**

Mathematical Physics for Nuclear Experiments presents an accessible introduction to the mathematical derivations of key equations used in describing and analysing results of typical nuclear physics experiments. Instead of merely showing results and citing texts, crucial equations in nuclear physics such as the Bohr's classical formula, Bethe's quantum mechanical formula for energy loss, Poisson, Gaussian and Maxwellian distributions for radioactive decay, and the Fermi function for beta spectrum analysis, among many more, are presented with the mathematical bases of their derivation and with their physical utility.

CRC Press

January 2022:278

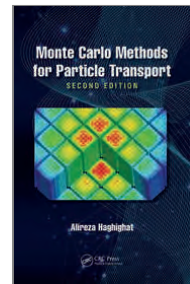
Hb: 978-0-367-76852-2: £150

Pb: 978-1-032-10499-7: £58.99

eBook: 978-1-003-21562-2

* For full contents and more information, visit: www.routledge.com/9781032104997

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Monte Carlo Methods for Particle Transport**Alireza Haghghat**

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CRC Press

April 2022:310

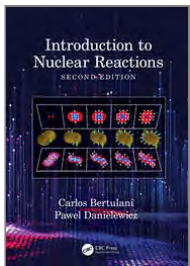
Hb: 978-0-367-18805-4: £120

Pb: 978-0-367-53809-5: £49.99

eBook: 978-0-429-19839-7

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2ND EDITION

Introduction to Nuclear Reactions**Carlos Bertulani, Pawel Danielewicz**

Until the publication of the first edition of Introduction to Nuclear Reactions in 2004, an introductory reference on nuclear reactions had been unavailable. Now, fully updated throughout, this second edition continues to provide an authoritative overview of nuclear reactions. It discusses the main formalisms, ranging from basic laws to the final formulae used in academic research to calculate measurable quantities.

CRC Press

September 2022:420

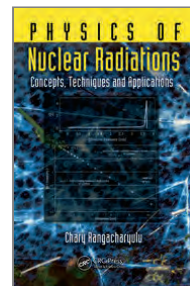
Hb: 978-0-367-35362-9: £135

Pb: 978-0-367-34993-6: £45.99

eBook: 978-0-429-33106-0

* For full contents and more information, visit: www.routledge.com/9780367349936**Physics of Nuclear Radiations**

Concepts, Techniques and Applications

**Chary Rangacharyulu**

This text makes the physics of nuclear radiations accessible to students with a basic background in physics and mathematics. Rather than convince students one way or the other about the hazards of nuclear radiations, the text empowers them with tools to calculate and assess nuclear radiations and their impact. It discusses the meaning behind mathematical formulae as well as the areas in which the equations can be applied. Coverage includes archeology, health, and medical physics applications.

CRC Press

December 2013:383

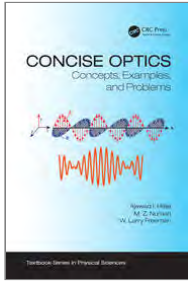
Hb: 978-1-439-85777-9: £110

eBook: 978-0-429-06868-3

* For full contents and more information, visit: www.routledge.com/9781439857779

Concise Optics

Concepts, Examples, and Problems



Ajawad I. Haija, M. Z. Numan, W. Larry Freeman

Series: Textbook Series in Physical Sciences

This introductory text is a reader friendly treatment of geometrical and physical optics emphasizing problems and solved examples with detailed analysis and helpful commentary. The authors are seasoned educators with decades of experience teaching optics. Their approach is to gradually present mathematics explaining the physical concepts. It covers ray tracing to the wave nature of light, and introduces Maxwell's equations in an organic fashion. The text then moves on to explain how to analyze simple optical systems such as spectacles for improving vision, microscopes, and telescopes, while also being exposed to contemporary research topics.

CRC Press

March 2018:486

Hb: 978-1-138-10712-0: **£230**

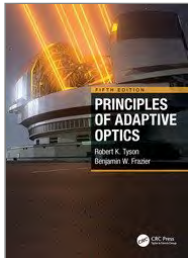
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5TH EDITION

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Robert K. Tyson, Benjamin West Frazier

Principles of Adaptive Optics describes the foundations, principles, and applications of adaptive optics (AO) and its enabling technologies. This leading textbook addresses the fundamentals of AO at the core of astronomy, high-energy lasers, biomedical imaging, and optical communications.

CRC Press

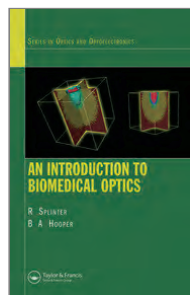
February 2022:356

Hb: 978-0-367-67603-2: **£96.99**

eBook: 978-1-003-14019-1

* For full contents and more information, visit: www.routledge.com/9780367676032

An Introduction to Biomedical Optics



Robert Splinter, Brett A. Hooper

Series: Series in Optics and Optoelectronics

This is the first comprehensive, introductory book describing both diagnostic and therapeutic optical methods in medicine. The first section covers the history of optics theory and the basic science behind light-tissue interactions. It also introduces the relevant approaches and approximations used to describe light propagation in turbid biological media. In the second section, the authors look more closely at light-tissue interactions and their applications in different medical areas, such as wound healing and tissue welding. The final section examines the various diagnostic methods that are employed using optical techniques. Throughout, the text employs numerical examples of clinical and research requirements.

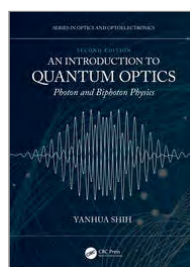
CRC Press
December 2006:624
Hb: 978-0-750-30938-7: **£99.99**
eBook: 978-0-429-14814-9

* For full contents and more information, visit: www.routledge.com/9780750309387

2ND EDITION

An Introduction to Quantum Optics

Photon and Biphoton Physics



Yanhua Shih

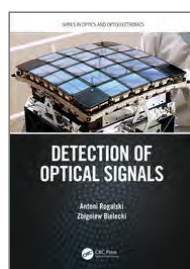
Series: Series in Optics and Optoelectronics

This text offers a complete revision for its introduction to the quantum theory of light, including notable developments as well as improvements in presentation of basic theory and concepts, with continued emphasis on experimental aspects. The author provides a thorough overview on basic methods of classical and quantum mechanical measurements in quantum optics, enabling readers to analyze, summarize, and resolve quantum optical problems. The broad coverage of concepts and tools and its practical, experimental emphasis set it apart from other available resources. New discussions of timely topics such as the concept of the photon and distinguishability bring the entire contents up to date.

CRC Press
May 2023:448
Hb: 978-1-138-60125-3: **£120**
Pb: 978-0-367-67359-8: **£45.99**
eBook: 978-1-003-13060-4

* For full contents and more information, visit: www.routledge.com/9780367673598

Detection of Optical Signals



Antoni Rogalski, Zbigniew Bielecki

Series: Series in Optics and Optoelectronics

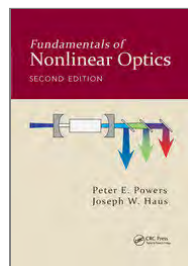
Detection of Optical Signals provides a comprehensive overview of important technologies for photon detection, from the X-ray through ultraviolet, visible, infrared to far-infrared spectral regions. It uniquely combines perspectives from many disciplines, particularly within physics and electronics, which are necessary to have a complete understanding of optical receivers. This will be an invaluable resource for graduate students in physics and engineering, as well as a helpful refresher for those already working with aerospace sensors and systems, remote sensing, thermal imaging, military imaging, optical telecommunications, infrared spectroscopy, and light detection.

CRC Press
June 2022:594
Hb: 978-1-032-05948-8: **£135**
eBook: 978-1-003-26309-8

* For full contents and more information, visit: www.routledge.com/9781032059488

2ND EDITION

Fundamentals of Nonlinear Optics



Peter E. Powers, Joseph W. Haus

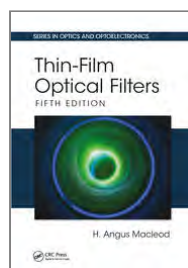
This fully revised edition of the groundbreaking text by the late Peter Powers offers enhanced coverage while remaining the most 'essentials only,' practical introductory treatment available. It includes a brand new chapter on quantum nonlinear optics, other added sections and improvements, as well as many new problems and examples. This up-to-date treatment reflects the latest device applications and importance of nonlinear optics in development of materials, optical switching and processing, and nonlinear guided wave optics.

CRC Press
December 2019:500
Hb: 978-1-498-73683-1: **£105**
Pb: 978-0-367-87411-7: **£51.99**
eBook: 978-1-315-11643-3

* For full contents and more information, visit: www.routledge.com/9780367874117

5TH EDITION

Thin-Film Optical Filters



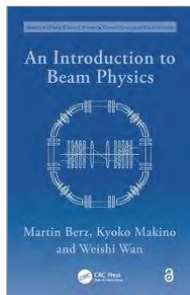
H. Angus Macleod

This book is quite simply the Bible for the field of optical thin films. It gives the most complete introduction to thin film optical coatings addressed to manufacturers and users alike. This fifth edition continues in this role, offering a complete update on current design, manufacture, performance, and applications. Among new topics are absorbers and coherent perfect absorbers, photonic crystals, and metamaterials for optical coating. In addition, the author has added substantial new information on scattering, composite materials, wire grid polarizers, laser damage, and a complete update of applications.

CRC Press
March 2021:696
Hb: 978-1-138-19824-1: **£165**
Pb: 978-0-367-78160-6: **£45.99**
eBook: 978-1-315-27049-4

* For full contents and more information, visit: www.routledge.com/9780367781606

An Introduction to Beam Physics



Martin Berz, Kyoko Makino, Weishi Wan

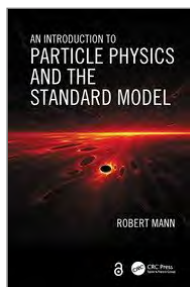
Series: Series in Particle Physics, Cosmology and Gravitation

Accessible to beginning graduate and upper-division undergraduate students in physics, mathematics, and engineering, this book is based on lectures given at Michigan State University, the online VUbeam program, the U.S. Particle Accelerator School, the CERN Academic Training Programme, and other venues. It begins with essential techniques of production, acceleration, and storage of beams, whenever possible from the historical perspective. It covers transfer maps of single- and multi-pass systems and their properties as well as some advanced topics, including aberration integrals and analysis of resonances.

CRC Press
October 2016:314
Hb: 978-0-750-30263-0: £140
Pb: 978-1-138-19890-6: £48.99
eBook: 978-0-429-14813-2

* For full contents and more information, visit: www.routledge.com/9781138198906

An Introduction to Particle Physics and the Standard Model



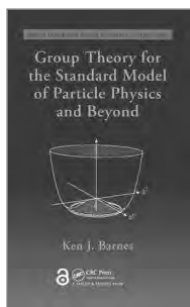
Robert Mann

Emphasizing the connections between particle physics and the rest of the physics field, this book provides an organizational framework for understanding modern particle physics. The author presents a standard model of strong, weak, and electromagnetic interactions. Undergraduate students will develop a working knowledge of some of the calculation methods and mathematical tools used in particle physics. Reviewing key experimental and theoretical achievements in the field, the text covers such topics as conservation laws, quantum electrodynamics, and wave equations. The final chapter offers a perspective on the future of particle physics.

CRC Press
November 2009:614
Hb: 978-1-420-08298-2: £84.99
eBook: 978-0-429-14122-5

* For full contents and more information, visit: www.routledge.com/9781420082982

Group Theory for the Standard Model of Particle Physics and Beyond



Ken J. Barnes

Series: Series in Particle Physics, Cosmology and Gravitation

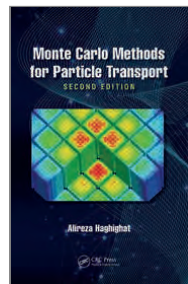
Based on the author's well-established courses, this text explores the use of symmetries through descriptions of the techniques of Lie groups and Lie algebras. It develops the models, theoretical framework, and mathematical tools to understand these symmetries. The author presents the modern framework of special relativity and describes Lie group techniques for the standard model and beyond. He also provides a stepping-stone to Einstein's work on general relativity and goes beyond the standard model to explore supertransformations, superspace methods, and more. The text includes many worked examples and problems, along with a solutions manual for qualifying instructors.

CRC Press
March 2010:256
Hb: 978-1-420-07874-9: £82.99
eBook: 978-0-429-18455-0

* For full contents and more information, visit: www.routledge.com/9781420078749

2ND EDITION

Monte Carlo Methods for Particle Transport



Alireza Haghghat

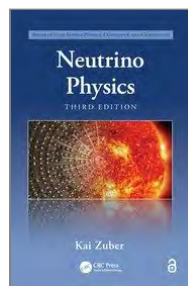
Fully updated with the latest developments in the eigenvalue Monte Carlo calculations and automatic variance reduction techniques and containing an entirely new chapter on fission matrix and alternative hybrid techniques. This second edition explores the uses of the Monte Carlo method for real-world applications, explaining its concepts and limitations.

CRC Press
April 2022:310
Hb: 978-0-367-18805-4: £120
Pb: 978-0-367-53809-5: £49.99
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3RD EDITION

Neutrino Physics



Kai Zuber

Series: Series in Particle Physics, Cosmology and Gravitation

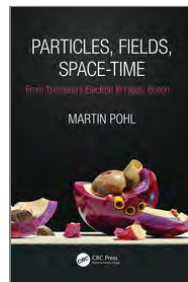
This book provides a comprehensive self-contained examination of neutrinos, covering their research history and theory, as well as their application to particle physics, astrophysics, nuclear physics, and the broad reach of cosmology. Revised as needed to be equal to the research of today, Neutrino Physics, Third Edition delves into neutrino cross sections, mass measurements, double beta decay, solar neutrinos, neutrinos from supernovae, and high energy neutrinos, as well as new experimental results in the context of theoretical models.

CRC Press
December 2021:465
Hb: 978-1-138-71889-0: £110
Pb: 978-1-032-24220-0: £39.99
eBook: 978-1-315-19561-2

* For full contents and more information, visit: www.routledge.com/9781032242200

Particles, Fields, Space-Time

From Thomson's Electron to Higgs' Boson



Martin Pohl

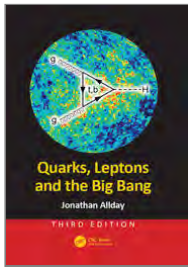
This book explores the concepts, ideas, and experimental results that brought us from the discovery of the first elementary particle in the end of the 19th century to the completion of the Standard Model of particle physics in the early 21st century.

CRC Press
September 2020:312
Hb: 978-0-367-35381-0: £175
Pb: 978-0-367-34723-9: £43.99
eBook: 978-0-429-33110-7

* For full contents and more information, visit: www.routledge.com/9780367347239

3RD EDITION

Quarks, Leptons and the Big Bang



Jonathan Allday

Quarks, Leptons and The Big Bang, Third Edition, is a clear, readable and self-contained introduction to particle physics and related areas of cosmology. It bridges the gap between non-technical popular accounts and textbooks for advanced students. The book concentrates on presenting the subject from the modern perspective of quarks, leptons and the forces between them. This book will appeal to students, teachers and general science readers interested in fundamental ideas of modern physics. This edition brings the book completely up to date by including advances in particle physics and cosmology, such as the discovery of the Higgs boson, the LIGO gravitational wave discovery and the WMAP and PLANCK results.

CRC Press

November 2016:393

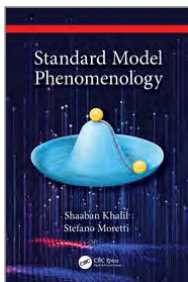
Hb: 978-1-138-42717-4: £185

Pb: 978-1-498-77311-9: £45.99

eBook: 978-1-315-38136-7

* For full contents and more information, visit: www.routledge.com/9781498773119

Standard Model Phenomenology



Shaaban Khalil, Stefano Moretti

This new book is fully up to date with all the latest developments on both theoretical and experimental investigations of the Standard Model (SM) of particle physics with a particular emphasis on its historical development on both sides.

CRC Press

June 2022:246

Hb: 978-1-138-33643-8: £175

eBook: 978-0-429-44301-5

* For full contents and more information, visit: www.routledge.com/9781138336438

The Science and Technology of Particle Accelerators



Rob Appleby, Graeme Burt, James Clarke, Hywel Owen

This book provides integrated coverage of accelerator science and technology, this book presents the fundamental concepts alongside detailed engineering discussions and extensive practical guidance, including many numerical examples. For each topic, the authors provide a description of the physical principles, a guide to the practical application of those principles, and a discussion of how to design the components that allow the application to be realised.

CRC Press

August 2022:318

Hb: 978-1-138-49987-4: £115

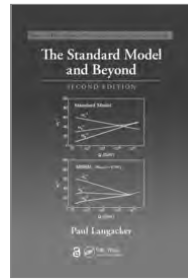
Pb: 978-1-032-39984-3: £44.99

eBook: 978-1-351-00796-2

* For full contents and more information, visit: www.routledge.com/9781032399843

2ND EDITION

The Standard Model and Beyond



Paul Langacker

Series: Series in Particle Physics, Cosmology and Gravitation

This new edition of The Standard Model and Beyond presents an advanced introduction to the physics and formalism of the standard model and other non-abelian gauge theories. It provides a solid background for understanding supersymmetry, string theory, extra dimensions, dynamical symmetry breaking, and cosmology. In addition to updating all of the experimental and phenomenological results from the first edition, it contains a new chapter on collider physics; expanded discussions of Higgs, neutrino, and dark matter physics; and many new problems.

CRC Press

June 2020:650

Hb: 978-1-498-76321-9: £86.99

Pb: 978-0-367-57344-7: £45.99

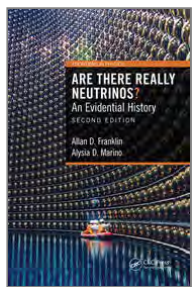
eBook: 978-1-315-17062-6

* For full contents and more information, visit: www.routledge.com/9780367573447

2ND EDITION

Are There Really Neutrinos?

An Evidential History



Allan D. Franklin, Alysia D. Marino

Series: *Frontiers in Physics*

This intriguing and accessible book examines the experiments on neutrino oscillations. It argues that this history gives us good reason to believe in the existence of neutrinos, a particle that interacts so weakly with matter that its interaction length is measured in light years of lead. Yet, the scientific process has provided evidence of the elusive neutrino. Written in a style accessible to any reader with a college education in physics, *Are There Really Neutrinos?* is of interest to students and researchers alike. This second edition contains a new epilogue highlighting the new developments in neutrino physics over the past 20 years.

CRC Press

September 2021:416

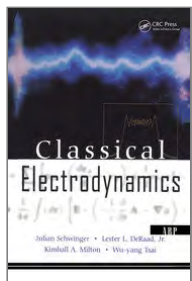
Hb: 978-0-367-19002-6: **£180**

Pb: 978-0-367-19005-7: **£42.99**

eBook: 978-0-429-19978-3

* For full contents and more information, visit: www.routledge.com/9780367190057

Classical Electrodynamics



Julian Schwinger, Lester L. Deraad Jr., Kimball Milton, Wu-Yang Tsai

Series: *Frontiers in Physics*

An essential resource for both physicists and their students, the book includes a "Reader's Guide," which describes the major themes in each chapter, suggests a possible path through the book, and identifies topics for inclusion in, and exclusion from, a given course, depending on the instructor's preference. Carefully constructed problems complement the material of the text and introduce new topics. The book should be of great value to all physicists, from first-year graduate students to senior researchers, and to all those interested in electrodynamics, field theory, and mathematical physics.

CRC Press

September 1998:596

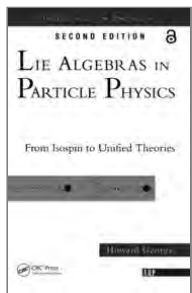
Hb: 978-0-738-20056-9: **£110**

eBook: 978-0-429-50354-2

* For full contents and more information, visit: www.routledge.com/9780738200569

Lie Algebras In Particle Physics

from Isospin To Unified Theories



Howard Georgi

Series: *Frontiers in Physics*

Howard Georgi is the co-inventor (with Sheldon Glashow) of the SU(5) theory. This extensively revised and updated edition of his classic text makes the theory of Lie groups accessible to graduate students, while offering a perspective on the way in which knowledge of such groups can provide an insight into the development of unified theories of strong, weak, and electromagnetic interactions.

CRC Press

October 1999:340

Hb: 978-0-367-09172-9: **£135**

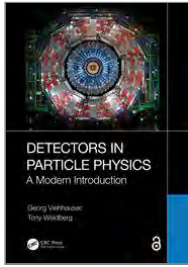
Pb: 978-0-738-20233-4: **£76.99**

eBook: 978-0-429-49921-0

* For full contents and more information, visit: www.routledge.com/9780738202334

Detectors in Particle Physics

A Modern Introduction



Georg Viehhauser, Tony Weidberg

This textbook provides an accessible yet comprehensive introduction to detectors in particle physics. It emphasises the core physics principles, enabling a deeper understanding of the subject for further and more advanced studies. In addition to the discussion of the underlying detector physics, another aspiration of this book is to introduce the reader to practically important aspects of particle detectors, like electronics, alignment, calibration and simulation of particle detectors. Case studies of the various applications of detectors in particle physics are provided.

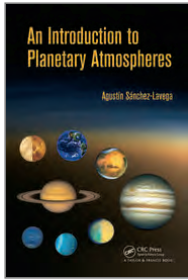
CRC Press

March 2024:348

Hb: 978-1-032-24658-1: £74.99

* For full contents and more information, visit: www.routledge.com/9781032246581

An Introduction to Planetary Atmospheres



Agustin Sanchez-Lavega

Providing a much-needed resource for this cross-disciplinary field, this text presents current knowledge on atmospheres and the fundamental mechanisms operating on them. It offers a unified scheme of the chemical and physical processes occurring in atmospheres and extends the theoretical foundations of an atmospheric topic to all planets and satellites with an atmosphere. The text provides an up-to-date comparative vision of the phenomena in atmospheres that encompasses the latest planetary space mission discoveries. It also reviews the observational methods and current facilities used to explore planetary atmospheres on Earth and in space.

CRC Press

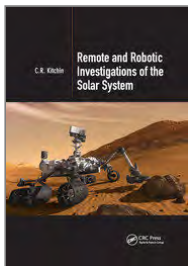
September 2010:632

Hb: 978-1-420-06732-3: **£71.99**

eBook: 978-0-429-18458-1

* For full contents and more information, visit: www.routledge.com/9781420067323

Remote and Robotic Investigations of the Solar System



C.R. Kitchen

Remote and Robotic Investigations of the Solar System covers all aspects of solar system observations: the instruments, their theory, and their practical use both on Earth and in space. It explores the state-of-the-art telescopes, cameras, spacecraft and instruments used to analyse the interiors, surfaces, atmospheres and radiation belts of solar system objects, in addition to radio waves, gamma rays, cosmic rays and neutrinos. This book would be ideal for university students undertaking physical science subjects and professionals working in the field, in addition to amateur astronomers and anyone interested in learning more about our local astronomical neighbour.

CRC Press

December 2019:376

Hb: 978-1-498-70493-9: **£130**

Pb: 978-0-367-87166-6: **£44.99**

eBook: 978-1-351-25547-9

* For full contents and more information, visit: www.routledge.com/9780367871666

Solar System

Between Fire and Ice



Thomas Hockey, Jennifer Lynn Bartlett, Daniel C. Boice

Combining the latest astronomical results with a historical perspective, Solar System: Between Fire and Ice takes you on a fabulous tour of our intriguing Solar System.

CRC Press

August 2021:352

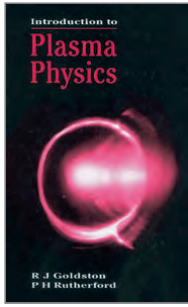
Hb: 978-1-032-05437-7: **£96.99**

Pb: 978-0-367-76869-0: **£36.99**

eBook: 978-1-003-19755-3

* For full contents and more information, visit: www.routledge.com/9780367768690

Introduction to Plasma Physics



R.J. Goldston, P.H. Rutherford

Focusing on the fundamentals of modern plasma physics, this text is ideal for an introductory lecture course on plasma physics. Sections on single-particle motion, plasmas as fluids, and collisional processes in plasmas lay the groundwork for a thorough understanding of the subject. The authors place the material in its historical context for a rich understanding of the ideas presented. They also emphasize the importance of medical imaging in radiotherapy, providing a logical link to more advanced works in the area. The text includes problems, tables, illustrations, a thorough index, and a complete list of references.

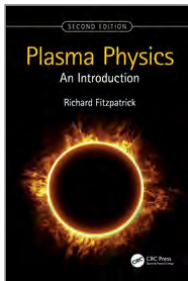
CRC Press
November 1995:510
Hb: 978-1-138-45831-4: £180
Pb: 978-0-750-30183-1: £86.99
eBook: 978-0-367-80695-8

* For full contents and more information, visit: www.routledge.com/9780750301831

2ND EDITION

Plasma Physics

An Introduction



Richard Fitzpatrick

Plasma Physics: An Introduction is based on a series of university course lectures by a leading name in the field, and thoroughly covers the physics of the fourth state of matter. This textbook provides a concise and cohesive introduction to plasma physics theory and offers a solid foundation for students of physics wishing to take higher level courses in plasma physics. This second edition has been fully updated to include new content on collisions and magnetic reconnection.

CRC Press
December 2022:306
Hb: 978-1-032-21407-8: £125
Pb: 978-1-032-20251-8: £49.99
eBook: 978-1-003-26825-3

* For full contents and more information, visit: www.routledge.com/9781032202518

Plasma Physics via Computer Simulation



C.K. Birdsall, A.B. Langdon

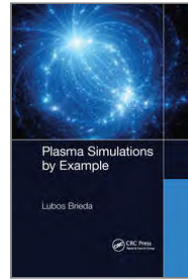
Series: *Series in Plasma Physics*

Divided into three main parts, Plasma Physics via Computer Simulation guides the reader to an understanding of the basic concepts in this fascinating field of research. Part 1 introduces you to the fundamental concepts of simulation. It examines one-dimensional electrostatic codes and electromagnetic codes, and describes the numerical methods and analysis. Part 2 explores the mathematics and physics behind the algorithms used in Part 1. In Part 3, it addresses some of the more complicated simulations in two and three dimensions. Using software available from the author's website, readers are encouraged to perform practical work.

CRC Press
October 2004:504
Pb: 978-0-750-31025-3: £105
eBook: 978-1-315-27504-8

* For full contents and more information, visit: www.routledge.com/9780750310253

Plasma Simulations by Example



Lubos Brieda

The study of plasmas is crucial in improving our understanding of the universe, and they are being increasingly utilised in key technologies such as spacecraft thrusters, plasma medicine, and fusion energy. Providing the reader with an easy to follow set of examples that clearly illustrate how simulation codes are written, this new book guides readers how to develop C++ computer codes for simulating plasmas primarily with the kinetic Particle in Cell (PIC) method. This text would be invaluable to advanced undergraduates and graduate students looking to learn how to put the theory to the test.

CRC Press
September 2021:368
Hb: 978-1-138-34232-3: £175
Pb: 978-1-032-17614-7: £45.99
eBook: 978-0-429-43978-0

* For full contents and more information, visit: www.routledge.com/9781032176147

Problems and Solutions in Medical Physics - Three Volume Set



Kwan-Hoong Ng, Robin Hill, Alan Perkins, Jeannie Hsiu Ding Wong, Geoffrey Clarke, Chai Hong Yeong, Ngie Min Ung

Series: *Series in Medical Physics and Biomedical Engineering*

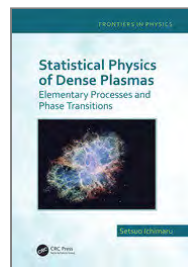
While graduate programs in medical physics are increasing across the globe, there is no graduate-level book currently dedicated to solving problems in medical physics. Filling this need, this three-volume set covers diagnostic imaging physics, nuclear medicine physics, and radiotherapy physics. It is suitable for graduate courses in medical physics, radiological sciences, and biomedical engineering. The set helps students understand how to apply theoretical concepts in real-world medical physics situations.

CRC Press
November 2022:600
Hb: 978-1-482-23985-0: £300
Pb: 978-1-032-33576-6: £125

* For full contents and more information, visit: www.routledge.com/9781032335766

Statistical Physics of Dense Plasmas

Elementary Processes and Phase Transitions



Setsuo Ichimaru

Series: *Frontiers in Physics*

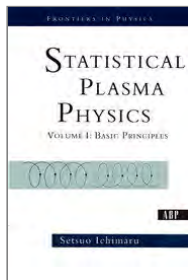
This timely book gives a complete overview on the statistical mechanics and electrodynamics elucidating the physical processes in dense plasma systems. The author emphasizes laboratory-based experiments on metallic hydrogen, and gives detailed account of the plasma phenomena in various astrophysical settings. The coverage encompasses the intersection with condensed matter physics, atomic physics, nuclear physics, and astrophysics, including such key topics as phase transitions, transport, optical and nuclear processes. This essential resource discusses important topics such as metallic hydrogen, stellar and planetary magnetisms, pycnonuclear reactions, and gravitational waves.

Chapman & Hall
December 2018:204
Hb: 978-1-138-36468-4: £170
Pb: 978-1-138-36466-0: £69.99
eBook: 978-0-429-43121-0

* For full contents and more information, visit: www.routledge.com/9781138364660

Statistical Plasma Physics, Volume I

Basic Principles



Setsuo Ichimaru

Series: Frontiers in Physics

Plasma physics is an integral part of statistical physics, complete with its own basic theories. Designed as a two-volume set, Statistical Plasma Physics is intended for advanced undergraduate and beginning graduate courses on plasma and statistical physics, and as such, its presentation is self-contained and should be read without difficulty by those with backgrounds in classical mechanics, electricity and magnetism, quantum mechanics, and statistics. Major topics include: plasma phenomena in nature, kinetic equations, plasmas and dielectric media, electromagnetic properties of Vlasov plasmas in thermodynamic equilibria, transient processes, and instabilities.

CRC Press

February 2004:406

Hb: 978-0-367-09201-6: **£130**

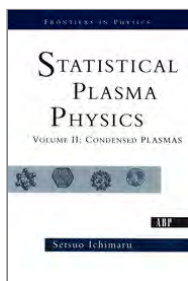
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Statistical Plasma Physics, Volume II

Condensed Plasmas



Setsuo Ichimaru

Series: Frontiers in Physics

The aim of this book is to elucidate a number of basic topics in physics of dense plasmas that interface with condensed matter physics, atomic physics, nuclear physics, and astrophysics. The different plasmas examined here include astrophysical dense plasmas - like those found in the interiors, surfaces, and outer envelopes of such astronomical objects as neutron stars, white dwarfs, the Sun, brown dwarfs, and giant planets. Condensed plasmas in laboratory settings cover metals and alloys (solid, amorphous, liquid, and compressed), semiconductors (electrons, holes, and their droplets), and various realizations of dense plasmas (shock-compressed, diamond-anvil cell, metal vaporization, pinch discharges, and more.)

CRC Press

February 2004:304

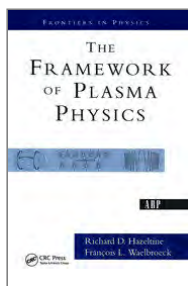
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The Framework Of Plasma Physics



Richard D. Hazeltine, Francois L. Waelbroeck

Series: Frontiers in Physics

Plasma physics is a necessary part of our understanding of stellar and galactic structure. It determines the magnetospheric environment of the earth and other planets; it forms the research frontier in such areas as nuclear fusion, advanced accelerators, and high power lasers; and its applications to various industrial processes (such as computer chip manufacture) are rapidly increasing. It is thus a subject with a long list of scientific and technological applications. This book provides the scientific background for understanding such applications, but it emphasizes something else: the intrinsic scientific interest of the plasma state.

CRC Press

January 2004:343

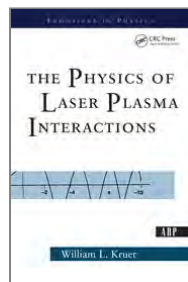
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The Physics Of Laser Plasma Interactions



William Kruer

Series: Frontiers in Physics

This book focuses on the physics of laser plasma interactions and presents a complementary and very useful numerical model of plasmas. It describes the linear theory of light wave propagation in plasmas, including linear mode conversion into plasma waves and collisional damping.

CRC Press

January 2003:196

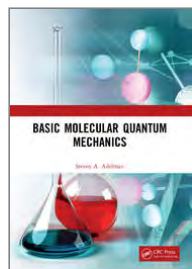
Hb: 978-0-367-31418-7: **£135**

Pb: 978-0-813-34083-8: **£58.99**

eBook: 978-1-003-00324-3

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Basic Molecular Quantum Mechanics



Steven A. Adelman

This book introduces quantum mechanics by covering the fundamentals of quantum mechanics and some of its most important chemical applications: vibrational and rotational spectroscopy and electronic structure of atoms and molecules. Thoughtfully organized, the author builds up quantum mechanics systematically with each chapter preparing the student for the more advanced chapters and complex applications.

CRC Press

August 2021:464

Hb: 978-1-032-01065-6: £180

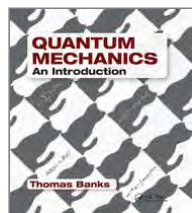
Pb: 978-1-498-73399-1: £74.99

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* For full contents and more information, visit: www.routledge.com/9781498733991

Quantum Mechanics

An Introduction



Thomas Banks

This new introductory textbook gives a complete, modern perspective on quantum mechanics as the basis of so much of physical sciences and today's electronic technologies. It clarifies for the first time many common misconceptions regarding wave/particle duality and the correct interpretation of measurements. The author, a recognized authority in the field and dedicated educator, presents information at an elementary level, avoiding the detailed, complex derivations in favor of simple, clear explanations.

CRC Press

March 2021:568

Hb: 978-1-482-25506-5: £105

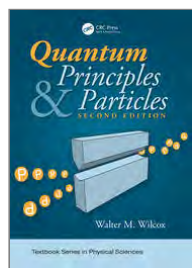
Pb: 978-0-367-78062-3: £44.99

eBook: 978-0-429-43842-4

* For full contents and more information, visit: www.routledge.com/9780367780623

2ND EDITION

Quantum Principles and Particles, Second Edition



Walter Wilcox

Series: Textbook Series in Physical Sciences

This textbook offers a unique introduction to quantum mechanics progressing gradually from elementary quantum mechanics to aspects of particle physics. It presents the microscopic world by analysis of the simplest possible quantum mechanical system (spin 1/2). A special feature is the author's use of visual aids known as process diagrams, which show how amplitudes for quantum mechanical processes are computed. The second edition include a new chapter on time-dependent processes, in addition to many new problems and improved illustrations.

CRC Press

August 2019:600

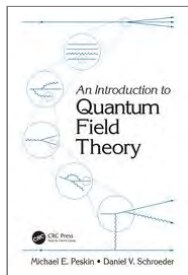
Hb: 978-1-138-09041-5: £150

Pb: 978-1-138-09037-8: £99.99

eBook: 978-1-138-09043-9

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An Introduction To Quantum Field Theory



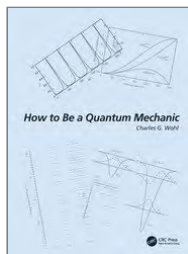
Michael E. Peskin, Daniel V. Schroeder

This is a textbook intended for the graduate physics course covering relativistic quantum mechanics, quantum electrodynamics, and Feynman diagrams. The authors make these subjects accessible through carefully worked examples illustrating the technical aspects of the subject, and intuitive explanations of what is going on behind the mathematics. After presenting the basics of quantum electrodynamics, the authors discuss the theory of renormalization and its relation to statistical mechanics, and introduce the renormalization group. This discussion sets the stage for a discussion of the physical principles that underlie the fundamental interactions of elementary particle physics and their d

CRC Press
September 2019:868
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Pb: 978-0-367-32056-0: £64.99
eBook: 978-0-429-50355-9

* For full contents and more information, visit: www.routledge.com/9780367320560

How to Be a Quantum Mechanic



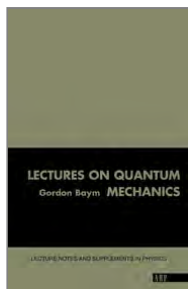
Charles G. Wohl

These lecture notes comprise an advanced undergraduate course in quantum mechanics as taught by Charles Wohl for over 30 years at the University of California, Berkeley. Each chapter covers a major subject in quantum mechanics, beginning with an accessible introduction and unfolding in subsections to signpost the reader's progression through the topic. And, because examples are the best way to get into a subject, every chapter ends with a series of problems—over 175 total in the book—to provide hands-on practice in calculating. Targeted to upper-division physics students and lecturers, this textbook and its worked examples will teach students how to think like a quantum mechanic.

CRC Press
October 2022:396
Hb: 978-1-032-25603-0: £115
Pb: 978-1-032-25602-3: £43.99
eBook: 978-1-003-28418-5

* For full contents and more information, visit: www.routledge.com/9781032256023

Lectures On Quantum Mechanics



Gordon Baym

These lecture notes comprise a three-semester graduate course in quantum mechanics at the University of Illinois. There are a number of texts which present the basic topics very well; but since a fair quantity of the material discussed in my course was not available to the students in elementary quantum mechanics books, I was asked to prepare written notes. In retrospect these lecture notes seemed sufficiently interesting to warrant their publication in this format. The notes, presented here in slightly revised form, constitute a self-contained course in quantum mechanics from first principles to elementary and relativistic one-particle mechanics. Prerequisite to reading these notes is some familiarity with elementary quantum mechanics, at least at the undergraduate level. Preferably the reader should already have met the uncertainty principle and the concept of a wave function. Prerequisites also include sufficient acquaintance with complex variables to be able to do simple contour i

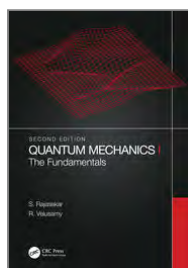
CRC Press
January 1974:606
Hb: 978-0-367-09187-3: £135
Pb: 978-0-805-30667-5: £76.99
eBook: 978-0-429-49926-5

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2ND EDITION

Quantum Mechanics I

The Fundamentals



S. Rajasekar, R. Velusamy

Quantum Mechanics I: The Fundamentals provides a graduate-level account of the behavior of matter and energy at the molecular, atomic, nuclear, and sub-nuclear levels. It covers basic concepts, mathematical formalism, and applications to physically important systems.

CRC Press
November 2022:606
Hb: 978-0-367-76998-7: £86.99
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2ND EDITION

Quantum Mechanics II

Advanced Topics



S. Rajasekar, R. Velusamy

Quantum Mechanics II: Advanced Topics offers a comprehensive exploration of the state-of-the-art in various advanced topics of current research interest. A follow-up to the authors' introductory book Quantum Mechanics I: The Fundamentals, this book expounds basic principles, theoretical treatment, case studies, worked-out examples and applications of advanced topics including quantum technologies.

CRC Press
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5TH EDITION

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Nicholas Tsoulfanidis, Sheldon Landsberger

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CRC Press

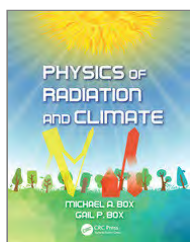
September 2021:642

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* For full contents and more information, visit: www.routledge.com/9780367434014

Physics of Radiation and Climate



Michael A. Box, Gail P. Box

This book offers an introduction to the physics of climate science. It is divided into three main sections, with the first providing an introduction to the atmosphere and ocean—their composition, thermodynamics, vertical structure, and basic flow patterns. The next chapters focus on the central physics of interactions between radiation, gases, and particles, addressing the core phenomena of absorption, emission, scattering, and radiative transfer. The final section integrates those principles and how they are applied in the study of weather and climate change.

CRC Press

October 2015:514

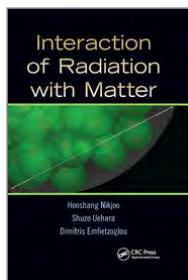
Hb: 978-1-138-42426-5: **£175**

Pb: 978-1-466-57205-8: **£94.99**

eBook: 978-0-429-19422-1

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Interaction of Radiation with Matter



Hooshang Nikjoo, Shuzo Uehara, Dimitris Emfietzoglou

Clearly progressing from an elementary level to the state of the art, this text focuses on the physics of the interactions of ionizing radiation in living matter and the Monte Carlo simulation of radiation tracks. It explores the classical physics of track description as well as modern aspects based on condensed matter physics. The authors include the relevant atomic physics background, show how to simulate radiation tracks in a computer experiment, and highlight applications in medical/health physics and radiation biology. A solutions manual is available with qualifying course adoption.

CRC Press

September 2020:364

Hb: 978-1-439-85357-3: £145

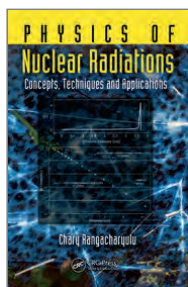
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Physics of Nuclear Radiations

Concepts, Techniques and Applications



Chary Rangacharyulu

This text makes the physics of nuclear radiations accessible to students with a basic background in physics and mathematics. Rather than convince students one way or the other about the hazards of nuclear radiations, the text empowers them with tools to calculate and assess nuclear radiations and their impact. It discusses the meaning behind mathematical formulae as well as the areas in which the equations can be applied. Coverage includes archeology, health, and medical physics applications.

CRC Press

December 2013:383

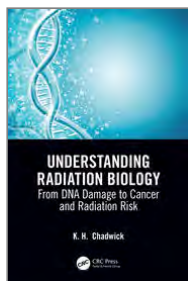
Hb: 978-1-439-85777-9: £110

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Understanding Radiation Biology

From DNA Damage to Cancer and Radiation Risk



Kenneth Chadwick

This textbook provides a qualitative and quantitative exploration of the action of radiation on living matter. It takes readers from radiation-induced molecular damage in the nucleus of the cell and links this damage to cellular effects such as cell killing, chromosome aberrations and mutations and on to organ damage, organism killing (lethality) and cancer induction. It also touches upon radiological protection and predicting the dose effect relationship for low dose and dose rate radiation risk. This book will provide the basic foundations of radiation biology for undergraduate and graduate students in medical physics, biomedical engineering, and medicine and radiology

CRC Press

December 2019:252

Hb: 978-0-367-25515-2: £230

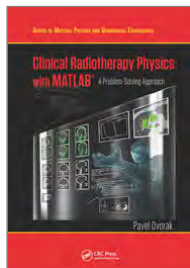
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Clinical Radiotherapy Physics with MATLAB

A Problem-Solving Approach



Pavel Dvorak

The first MATLAB programming book written specifically for clinical radiotherapy medical physicists and medical physics trainees, this much-needed book teaches users how to create their own clinical applications using MATLAB, as a complement to commercial software particularly when the latter does not cover specific local clinical needs. Chapters explore key radiotherapy areas such as handling volumes, 3D dose calculation, comparing dose distributions, reconstructing treatment plans and their summations, and automated tests for machine quality assurance.

CRC Press

June 2020:280

Hb: 978-1-498-75499-6: £115

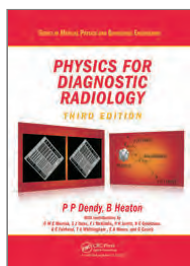
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eBook: 978-0-429-50809-7

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3RD EDITION

Physics for Diagnostic Radiology



Philip Palin Dendy, Brian Heaton

Series: Series in Medical Physics and Biomedical Engineering

Fully revised and updated, this bestselling text helps readers understand how various imaging techniques work. This edition includes new chapters on PET and PACS as well as new material on digital receptors, radiation doses and risks to patients, and special radiographic techniques, including subtraction techniques and interventional radiology. It also emphasizes the differences between analogue and digital images and covers multi-slice CT and three-dimensional resolution, dual energy applications, and cone beam CT. Exercises, multiple choice questions, extensive references, and further reading aid in understanding.

CRC Press

August 2011:716

Hb: 978-1-420-08315-6: £84.99

eBook: 978-0-429-18436-9

* For full contents and more information, visit: www.routledge.com/9781420083156

An Overview of General Relativity and Space-Time



Nicola Vittorio

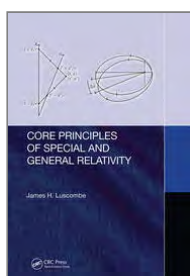
Series: Series in Astronomy and Astrophysics

This textbook equips Masters' students studying Physics and Astronomy with the necessary mathematical tools to understand the basics of General Relativity and its applications. It begins by reviewing classical mechanics with a more geometrically oriented language, continues with Special Relativity and, then onto a discussion on the pseudo-Riemannian space-times.

CRC Press
December 2022:270
Hb: 978-0-367-69288-9: £155
Pb: 978-0-367-68304-7: £61.99
eBook: 978-1-003-14125-9

* For full contents and more information, visit: www.routledge.com/9780367683047

Core Principles of Special and General Relativity



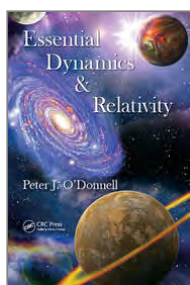
James Luscombe

This book provides an accessible, yet thorough, introduction to special and general relativity, crafted and class-tested over many years of teaching. Suitable for advanced undergraduate and graduate students, this book provides clear descriptions of how to approach the mathematics and physics involved. It is also contains the latest exciting developments in the field, including dark energy, gravitational waves, and frame dragging. The table of contents has been carefully developed in consultation with a large number of instructors teaching courses worldwide, to ensure its wide applicability to modules on relativity and gravitation.

CRC Press
March 2021:400
Hb: 978-1-138-54294-5: £84.99
Pb: 978-0-367-78067-8: £44.99
eBook: 978-0-429-02383-5

* For full contents and more information, visit: www.routledge.com/9780367780678

Essential Dynamics and Relativity



Peter J. O'Donnell

This text provides undergraduate students with an introduction to the core aspects of dynamics and special relativity. It helps students understand the precise nomenclature of dynamics and presents the mathematics of special relativity in a straightforward way. The author reiterates important ideas and terms throughout and covers concepts that are often missing from other textbooks at this level. He also places each topic within the wider constructs of the theory, without jumping from topic to topic to illustrate a point.

CRC Press
November 2014:336
Hb: 978-1-138-40418-2: £175
Pb: 978-1-466-58839-4: £58.99
eBook: 978-0-429-16799-7

* For full contents and more information, visit: www.routledge.com/9781466588394

General Relativity and its Applications

Black Holes, Compact Stars and Gravitational Waves



Valeria Ferrari, Leonardo Gualtieri, Paolo Pani

Containing the latest, groundbreaking discoveries in the field, this text outlines the basics of Einstein's theory of gravity with a focus on its most important astrophysical consequences, including stellar structures, black holes, and the physics of gravitational waves. Pedagogical feature boxes including examples, mathematical tools, and practical applications of theory to maximise learning make this text ideal for graduate students.

CRC Press
December 2020:494
Hb: 978-1-138-58977-3: £215
Pb: 978-0-367-62532-0: £81.99
eBook: 978-0-429-49140-5

* For full contents and more information, visit: www.routledge.com/9780367625320

Newtonian Dynamics

An Introduction



Richard Fitzpatrick

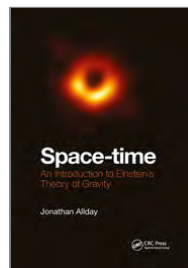
This textbook provides a comprehensive review of Newtonian dynamics at a level suitable for undergraduate physics students. It demonstrates that Newton's three laws of motion, combined with a few simple force laws, can not only describe the motions of everyday objects observed on the surface of the Earth, but can also account for the motions of celestial objects seen in the sky. The book will start off at a level suitable for undergraduate (freshman) physics students and will very gradually increase, until, towards the end, it will approach (but not quite reach) a level characteristic of a graduate (senior) physics course.

CRC Press
January 2024:284
Hb: 978-1-032-04662-4: £82.99
Pb: 978-1-032-05666-1: £44.99
eBook: 978-1-003-19864-2

* For full contents and more information, visit: www.routledge.com/9781032056661

Space-time

An Introduction to Einstein's Theory of Gravity



Jonathan Allday

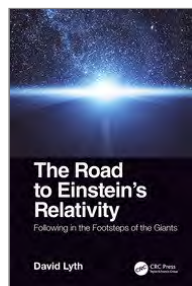
This book, suitable for interested post-16 school pupils or undergraduates looking for a supplement to their course text, develops our modern view of space-time and its implications in the theories of gravity and cosmology. While aspects of this topic are inevitably abstract, the book seeks to ground thinking in observational and experimental evidence where possible. In addition, some of Einstein's philosophical thoughts are explored and contrasted with our modern views. Written in an accessible yet rigorous style, Jonathan Allday, a highly accomplished writer, brings his trademark clarity and engagement to these fascinating subjects, which underpin so much of modern physics.

CRC Press
March 2021:370
Hb: 978-1-138-05668-8: £99.99
Pb: 978-0-367-77969-6: £39.99
eBook: 978-1-315-16514-1

* For full contents and more information, visit: www.routledge.com/9780367779696

The Road to Einstein's Relativity

Following in the Footsteps of the Giants



David Lyth

Expertly guided by renowned cosmologist Dr. David Lyth, learn about the pioneering scientists whose work provided the foundation for Einstein's formulation of his theories of relativity, and about Einstein's groundbreaking life and work as well. This highly readable and accessible panorama of the field delicately balances history and science as it takes the reader on an adventure through the centuries. Without complex mathematics or scientific formulae, this book will be of interest to all, even those without a scientific background, who are intrigued to find out more about what paved the way for one of our most famous physicists to push the boundaries of physics to new lengths.

CRC Press

January 2019:168

Hb: 978-0-367-02285-3: **£99.99**

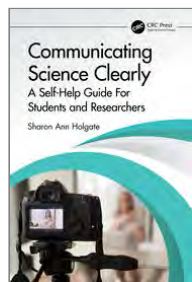
Pb: 978-0-367-00253-4: **£24.99**

eBook: 978-0-429-40044-5

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Communicating Science Clearly

A Self-Help Guide For Students and Researchers



Sharon Ann Holgate

This unique self-help guide equips undergraduates, postgraduate students, and early career researchers within the sciences with transferrable communication skills that they can adapt, and refer back to, as they progress through their careers. It provides practical guidance on how to best communicate science in a range of different settings.

CRC Press

November 2023:162

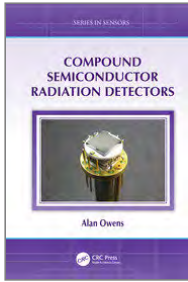
Hb: 978-1-032-07422-1: **£86.99**

Pb: 978-1-032-06911-1: **£35.99**

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Compound Semiconductor Radiation Detectors



Alan Owens

Series: Series in Sensors

For many applications, compound semiconductors are now viable competitors to elemental semiconductors because of their wide range of physical properties. This book describes all aspects of radiation detection and measurement using compound semiconductors, including crystal growth, detector fabrication, contacting, and spectroscopic performance (with particular emphasis on the X- and gamma-ray regimes). A concentrated reference for researchers in various disciplines as well as graduate students in specialized courses, the text outlines the potential and limitations of semiconductor detectors.

CRC Press

October 2016:567

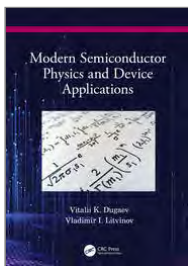
Hb: 978-1-439-87312-0: **£180**

Pb: 978-1-138-19958-3: **£66.99**

eBook: 978-0-429-06231-5

* For full contents and more information, visit: www.routledge.com/9781138199583

Modern Semiconductor Physics and Device Applications



Vitalii Dugaev, Vladimir Litvinov

This textbook provides a theoretical background for contemporary trends in solid state theory and semiconductor device physics. It discusses advanced methods of quantum mechanics and field theory and is therefore primarily intended for graduate students in theoretical and experimental physics who have already studied electrodynamics, statistical physics, and quantum mechanics.

CRC Press

May 2023:397

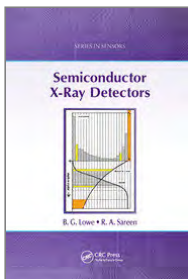
Hb: 978-0-367-25082-9: **£120**

Pb: 978-0-367-25080-5: **£45.99**

eBook: 978-0-429-28592-9

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Semiconductor X-Ray Detectors



B. G. Lowe, R. A. Sareen

Series: Series in Sensors

This book focuses on the history and development of Si(Li) X-Ray Detectors, while providing an up-to-date review of the principles, practical applications, and state of the art of semiconductor x-ray detectors. It describes many of the facets of x-ray detection and measurement using semiconductors, from manufacture to implementation. The initial chapters summarize relevant background physics, materials science, and engineering aspects. Later chapters compare and contrast the manufacture and physical properties of systems and materials currently employed, enabling readers to fully understand the materials and scope for applications.

CRC Press

November 2017:624

Hb: 978-1-466-55400-9: **£180**

Pb: 978-1-138-03385-6: **£62.99**

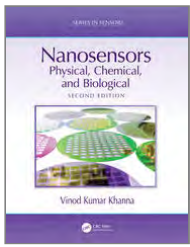
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Physical, Chemical, and Biological

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CRC Press

August 2022: 578

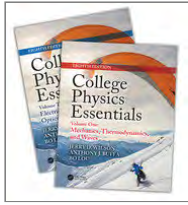
Hb: 978-0-367-45705-1: £250

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eBook: 978-1-003-02555-9

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College Physics Essentials, Eighth Edition (Two-Volume Set)



Jerry D. Wilson, Anthony J. Buffa, Bo Lou

This edition provides a streamlined update of a major textbook for algebra-based physics, reflecting the demand by instructors for more substance. The authors enhance emphasis on worked examples to enhance reader engagement, together with expanded problem sets that build from conceptual understanding to numerical solutions and real-world applications. It is the textbook of choice for those seeking a basic understanding of key physics concepts and how to apply them to real problems. The first volume covers mechanics, solids and fluids, heat, thermodynamics, vibrations and waves, and sound. The second volume covers electricity and magnetism, optics, atomic, nuclear, and quantum physics.

CRC Press
July 2022:812
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* For full contents and more information, visit: www.routledge.com/9781032337265

2ND EDITION

Fundamentals of Ceramics



Michel Barsoum

This second edition of Fundamentals of Ceramics adds a section on density functional theory calculations for shedding light on properties. It also adds more on applications, including solid oxide fuel cells as a case study and a major overhaul of the last chapter on optical properties. There's also new and extended discussion of such topics as non-parabolic oxidation, dislocation creep, thermal conductivity, ferroelectric ceramics, ferromagnetic ceramics, scattering mechanisms, surface tension, and processing of ceramics from aqueous environments.

CRC Press
June 2022:644
Hb: 978-1-498-70813-5: £120
Pb: 978-1-032-33730-2: £45.99
eBook: 978-1-498-70816-6

* For full contents and more information, visit: www.routledge.com/9781032337302

2ND EDITION

Fundamentals of Soft Matter Science



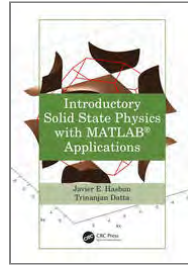
Linda S. Hirst

This revised edition continues to provide the most approachable introduction to the structure, characteristics, and everyday applications of soft matter. It begins with a substantially revised overview of the underlying physics and chemistry common to soft materials. Subsequent chapters comprehensively address the different classes of soft materials, from liquid crystals to surfactants, polymers, colloids, and biomaterials, with vivid, full-color illustrations throughout.

CRC Press
August 2019:304
Hb: 978-1-138-72478-5: £220
Pb: 978-1-138-72444-0: £86.99
eBook: 978-1-315-19238-3

* For full contents and more information, visit: www.routledge.com/9781138724440

Introductory Solid State Physics with MATLAB Applications



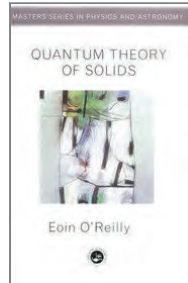
Javier E. Hasbun, Trinanjan Datta

Solid state physics, the study and prediction of the fundamental physical properties of materials, forms the backbone of modern materials science and has many technological applications. The unique feature of this text is the MATLAB®-based computational approach with several numerical techniques and simulation methods included. This is highly effective in addressing the need for visualization and a direct hands-on approach in learning the theoretical concepts of solid state physics. The code is freely available to all textbook users.

CRC Press
October 2019:570
Hb: 978-1-466-51230-6: £82.99
eBook: 978-0-429-08660-1

* For full contents and more information, visit: www.routledge.com/9781466512306

Quantum Theory of Solids



Eoin O'Reilly

Series: Master's Series in Physics and Astronomy

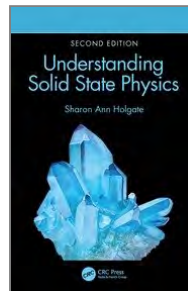
Although the topic is a well established sub-set of solid state physics, Quantum Theory of Solids develops the concepts of quantum theory for the solid state in a single, one-stop reference. Readers with previous courses in quantum mechanics and solid state physics can develop further, learning the three most significant topics in solid state physics: semiconductors, magnetism, and superconductivity. The author explains quantum mechanics techniques, such as the variational method and perturbation theory, not usually found in introductory courses. Covering the necessary physics from a basic to advanced level, the text is suitable for a stand-alone final year course.

CRC Press
September 2002:264
Hb: 978-0-748-40628-9: £110
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eBook: 978-1-315-27319-8

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2ND EDITION

Understanding Solid State Physics



Sharon Ann Holgate

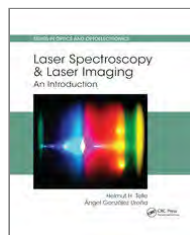
Keeping the mathematics to a minimum yet losing none of the required rigor, Understanding Solid State Physics, Second Edition clearly explains basic physics principles to provide a firm grounding in the subject. This new edition has been fully updated throughout, with recent developments and literature in the field, including graphene and the use of quasicrystalline materials, in addition to featuring new journalistic boxes and the reciprocal lattice.

CRC Press
April 2021:392
Hb: 978-0-367-25528-2: £240
Pb: 978-0-367-24985-4: £94.99
eBook: 978-0-429-28823-4

* For full contents and more information, visit: www.routledge.com/9780367249854

Laser Spectroscopy and Laser Imaging

An Introduction



Helmut H. Telle, Ángel González Ureña

Developments in and applications of laser spectroscopy and laser imaging are growing rapidly, specifically now that spectral analytical methodologies are merging with laser imaging techniques. It is the intention of this book to provide researchers, both in industry and academia, with a concise collection of laser analysis and imaging techniques. Written by two leaders in the field, it will introduce the reader to individual techniques in a tutorial-fashion and provide key examples and including details of the latest techniques.

CRC Press

December 2019:750

Hb: 978-1-466-58822-6: £170

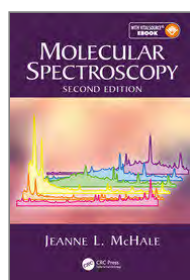
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* For full contents and more information, visit: www.routledge.com/9780367868215

2ND EDITION

Molecular Spectroscopy



Jeanne L. McHale

This newly expanded, extensively updated edition provides the most accessible and complete introduction to spectroscopy and dynamics of molecules in condensed phases. It covers practical spectroscopic approaches relevant for rapidly advancing areas such as nanomaterials and interfaces for optoelectronic devices, bioinspired materials for solar energy conversion, and biomedical applications of emissive nanoparticles. New chapters reflect the importance of time-resolved and nonlinear optical spectroscopy. Additional topics include terahertz spectroscopy, single molecule spectroscopy, Fourier-transform techniques, atomic spectroscopy, Stark spectroscopy, and computational approaches.

CRC Press

May 2017:475

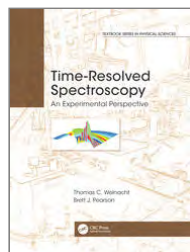
Hb: 978-1-466-58658-1: £91.99

eBook: 978-1-315-11521-4

* For full contents and more information, visit: www.routledge.com/9781466586581

Time-Resolved Spectroscopy

An Experimental Perspective



Thomas Weinacht, Brett J. Pearson

This concise and carefully developed text offers a reader friendly guide to the basics of time-resolved spectroscopy with an emphasis on experimental implementation. The authors carefully explain and relate for the reader how measurements are connected to the core physical principles. They use the time-dependent wave packet as a building block for understanding quantum dynamics, progressively advancing to more complex topics. The topics are discussed in paired sections, one discussing the theory and the next presenting the related experimental methods. A wide range of readers including students and newcomers to the field will gain a clear and practical und

CRC Press

March 2021:372

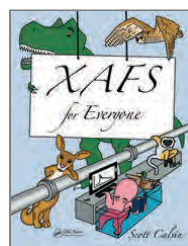
Hb: 978-1-498-71673-4: £115

Pb: 978-0-367-78040-1: £44.99

eBook: 978-0-429-44082-3

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XAFS for Everyone



Scott Calvin

This text provides a practical, thorough guide to x-ray absorption fine-structure (XAFS) spectroscopy for both novices and seasoned practitioners from a range of disciplines. Cartoon characters and easy-to-follow illustrations introduce multiple viewpoints without distracting from the main narrative. Whether you are encountering this technique for the first time or looking to hone your craft, this innovative and engaging book gives you insight on implementing XAFS spectroscopy and interpreting XAFS experiments and results. It helps you understand real-world trade-offs and the reasons behind common rules of thumb.

CRC Press

May 2013:460

Pb: 978-1-439-87863-7: £115

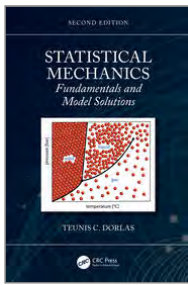
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Statistical Mechanics

Fundamentals and Model Solutions

**Teunis C Dorlas**

Fully updated throughout and with new chapters on the Mayer expansion for classical gases and on cluster expansion for lattice models, this new edition of *Statistical Mechanics: Fundamentals and Model Solutions* provides a comprehensive introduction to equilibrium statistical mechanics for advanced undergraduate and graduate students of mathematics and physics.

CRC Press

April 2021:348

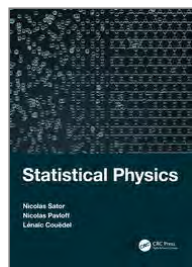
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eBook: 978-1-003-03717-0

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Nicolas Sator, Nicolas Pavloff, Lenaic Couedel

This book presents an introduction to the main concepts of statistical physics, followed by applications to specific problems and more advanced concepts, selected for their pedagogical or practical interest. Particular attention has been devoted to the presentation of the fundamental aspects, including the foundations of statistical physics, as well as to the discussion of important physical examples.

CRC Press

August 2023:450

Hb: 978-1-032-20706-3: £155

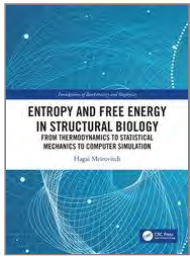
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Hagai Meirovitch

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CRC Press

April 2022:396

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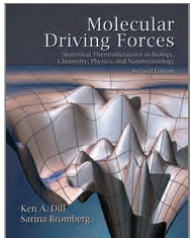
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Statistical Thermodynamics in Biology, Chemistry, Physics, and Nanoscience



Ken Dill, Sarina Bromberg

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Garland Science

October 2010:784

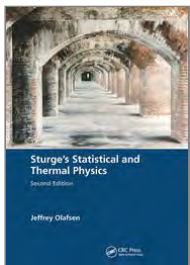
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Jeffrey Olafsen

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CRC Press

March 2021:422

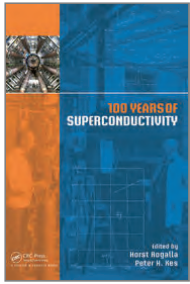
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CRC Press

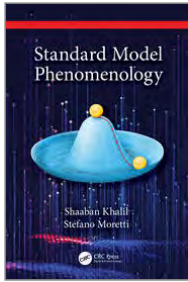
November 2011: 864

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* For **full contents** and more information, visit: www.routledge.com/9781439849460

Standard Model Phenomenology



Shaaban Khalil, Stefano Moretti

This new book is fully up to date with all the latest developments on both theoretical and experimental investigations of the Standard Model (SM) of particle physics with a particular emphasis on its historical development on both sides.

CRC Press

June 2022:246

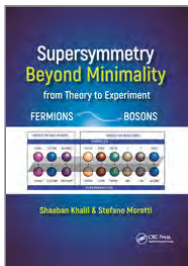
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eBook: 978-0-429-44301-5

* For full contents and more information, visit: www.routledge.com/9781138336438

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From Theory to Experiment



Shaaban Khalil, Stefano Moretti

Series: Series in Particle Physics, Cosmology and Gravitation

Supersymmetry is an elegant and simple theory, but its existence lacks direct proof. Instead of dismissing supersymmetry altogether, *Supersymmetry Beyond Minimality: from Theory to Experiment* suggests that supersymmetry may exist in more complex and subtle manifestation than the minimal model. The book explores in detail non-minimal supersymmetry models, in a bottom-up approach that interconnects experimental phenomena in the fermionic and bosonic sectors. The book considers with equal emphasis the Higgs and Superparticle sectors, and explains both collider and non-collider experiments. Uniquely, the book explores charge/parity and lepton flavour v

CRC Press

December 2019:400

Hb: 978-1-498-75673-0: £145

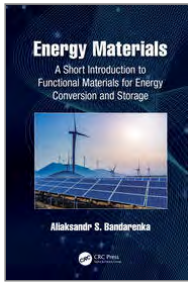
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Energy Materials

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Aliaksandr S. Bandarenka

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CRC Press

May 2023:252

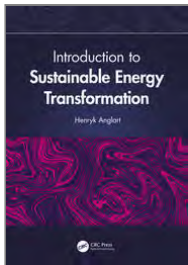
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eBook: 978-1-003-02549-8

* For full contents and more information, visit: www.routledge.com/9780367458102

Introduction to Sustainable Energy Transformation



Henryk Anglart

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CRC Press

November 2021:386

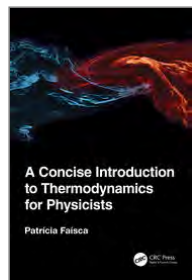
Hb: 978-0-367-47861-2: £205

Pb: 978-0-367-47080-7: £82.99

eBook: 978-1-003-03698-2

* For full contents and more information, visit: www.routledge.com/9780367470807

A Concise Introduction to Thermodynamics for Physicists



Patricia Faisca

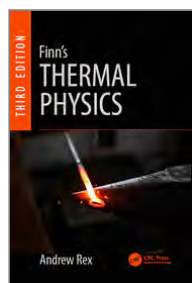
This introductory textbook on thermodynamics is designed for undergraduate students in physics, physics engineering, biophysics and biomedical engineering who are being exposed to the ideas and concepts of thermal physics for the first time. While this is a self-contained text on thermodynamics (i.e. focused on macroscopic physics), emphasis is placed on the microscopic underlying model in order to facilitate the understanding of thermodynamics concepts and properties, and motivate a future course on statistical physics. This book will equip the readers with an understanding of the scope and applicability of this discipline and will be able to apply it to study any physical system.

CRC Press
September 2022:236
Hb: 978-0-367-55084-4: **£120**
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eBook: 978-1-003-09192-9

* For full contents and more information, visit: www.routledge.com/9780367546410

3RD EDITION

Finn's Thermal Physics



Andrew Rex, C.B.P. Finn

This book continues to provide the most readable, concise, and easy-to-follow introduction to thermal physics. While maintaining the style of the original work, this new edition now covers statistical mechanics and incorporates worked examples systematically throughout the text. It also includes more problems and essential updates, such as discussions on superconductivity, magnetism, Bose-Einstein condensation, and climate change. Anyone needing to acquire an intuitive understanding of thermodynamics from first principles will find this third edition indispensable.

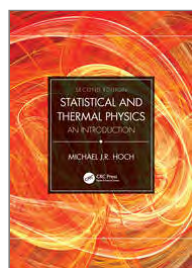
CRC Press
April 2017:386
Hb: 978-1-138-70378-0: **£130**
Pb: 978-1-498-71887-5: **£46.99**
eBook: 978-1-315-15718-4

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2ND EDITION

Statistical and Thermal Physics

An Introduction



Michael J.R. Hoch

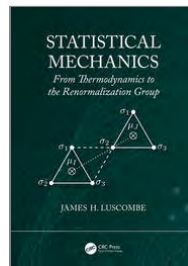
Thermal and statistical physics has established the principles and procedures needed to understand and explain the properties of systems consisting of macroscopically large numbers of particles. By developing microscopic statistical physics and macroscopic classical thermodynamic descriptions in tandem, *Statistical and Thermal Physics: An Introduction* provides insight into basic concepts and relationships at an advanced undergraduate level.

CRC Press
May 2021:348
Hb: 978-0-367-46410-3: **£205**
Pb: 978-0-367-46134-8: **£82.99**
eBook: 978-1-003-02860-4

* For full contents and more information, visit: www.routledge.com/9780367461348

Statistical Mechanics

From Thermodynamics to the Renormalization Group



James Luscombe

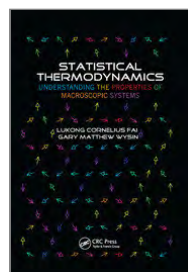
This textbook provides a comprehensive, yet accessible, introduction to statistical mechanics. Crafted and class-tested over many years of teaching, it carefully guides advanced undergraduate and graduate students who are encountering statistical mechanics for the first time through this – sometimes – intimidating subject. The book provides a strong foundation in thermodynamics and the ensemble formalism of statistical mechanics.

CRC Press
December 2020:400
Hb: 978-0-367-68927-8: **£170**
Pb: 978-1-138-54297-6: **£64.99**
eBook: 978-1-003-13966-9

* For full contents and more information, visit: www.routledge.com/9781138542976

Statistical Thermodynamics

Understanding the Properties of Macroscopic Systems



Lukong Cornelius Fai, Gary Matthew Wysin

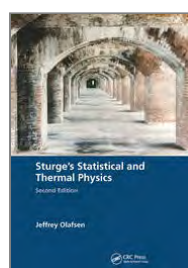
Presenting a look at the evolution of modern statistical thermodynamics, this book provides a detailed overview of the statistical principles used to obtain the physical and thermodynamic properties of macroscopic systems. Going further than many advanced textbooks, it includes Bose-Einstein, Fermi-Dirac statistics, and Lattice dynamics as well as applications in polaron theory, electronic gas in a magnetic field, thermodynamics of dielectrics, and magnetic materials in a magnetic field. The text also examines statistical thermodynamics using functional integration and Feynman path integrals. In addition, it features physical results as well as worked problems and a solutions manual.

CRC Press
September 2019:548
Hb: 978-1-466-51067-8: **£170**
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Jeffrey Olafsen

This fully revised and updated edition provides a uniquely accessible introduction to the principles and applications of statistical mechanics and thermodynamics. Based on the highly acclaimed text by famous physicist M.D. Sturge, it continues its emphasis on explaining concepts with simple mathematics and plain English, as well as consistent use of terminology and notation. The new edition includes a chapter on non-equilibrium thermodynamics and many new examples from soft condensed matter physics. Additionally, chapters have been reorganized for better flow.

CRC Press
March 2021:422
Hb: 978-1-482-25600-0: **£99.99**
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Thermal Physics Tutorials with Python Simulations



Minjoon Kouh, Taejoon Kouh

Series: Series in Computational Physics

This book may serve as a thermal physics textbook for a semester-long undergraduate thermal physics course or may be used as a tutorial on scientific computing with focused examples from thermal physics. This book will also appeal to engineering students studying intermediate-level thermodynamics as well as computer science students looking to understand how to apply their computer programming skills to science.

CRC Press

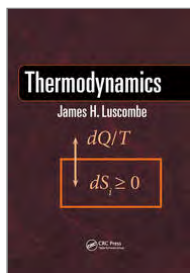
March 2023:238

Hb: 978-1-032-25756-3: **£76.99**

eBook: 978-1-003-28784-1

* For full contents and more information, visit: www.routledge.com/9781032257563

Thermodynamics



James Luscombe

This book provides an accessible yet thorough introduction to thermodynamics, crafted and class-tested over many years of teaching. Suitable for advanced undergraduate and graduate students, this book delivers clear descriptions of how to think about the mathematics and physics involved. The content has been carefully developed in consultation with a large number of instructors teaching courses worldwide, to ensure wide applicability to modules on thermodynamics. Modern applications of thermodynamics (in physics and related areas) are included throughout—something not offered to the same degree by existing texts in the field.

CRC Press

June 2020:240

Hb: 978-1-138-54298-3: **£84.99**

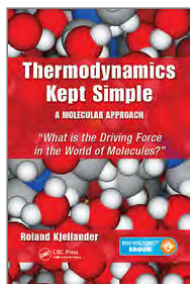
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Thermodynamics Kept Simple - A Molecular Approach

What is the Driving Force in the World of Molecules?



Roland Kjellander

This book offers a unique way of teaching and thinking about basic thermodynamics that helps students overcome common conceptual problems. It delivers a brilliantly conceived introduction to thermodynamics at the molecular level, presenting the core laws with clear explanations. The text covers key concepts such as entropy, energy transfer, heat exchange, work, enthalpy, free energy, irreversible and reversible processes, chemical equilibrium, and phase transitions in the molecular world, employing simple but well-chosen examples to supply insight into the molecular events underlying the thermodynamic macroscopic description.

CRC Press

August 2015:252

Pb: 978-1-482-24410-6: **£46.99**

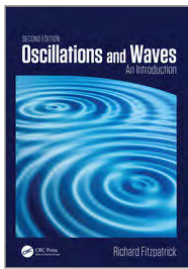
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* For full contents and more information, visit: www.routledge.com/9781482244106

2ND EDITION

Oscillations and Waves

An Introduction, Second Edition



Richard Fitzpatrick

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.

CRC Press

July 2018:309

Hb: 978-1-138-48035-3: £200

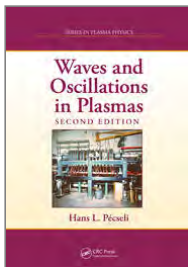
Pb: 978-1-138-47971-5: £77.99

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* For full contents and more information, visit: www.routledge.com/9781138479715

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Waves and Oscillations in Plasmas



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CRC Press

December 2021:554

Hb: 978-1-138-59129-5: £180

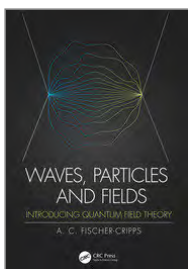
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Waves, Particles and Fields

Introducing Quantum Field Theory



Anthony C. Fischer-Cripps

This book presents a background to the concepts of quantum physics; from its inception and the original quantum physics of the Schrodinger Equation through to modern-day theories. It discusses the basics of mechanics, relativity, old and new quantum theory, and Feynman and the concept of a quantum field. It provides the necessary foundation for readers to then progress to more advanced texts on quantum field theory. This book will be of interest to undergraduate students in physics and mathematics and an interested, general audience.

CRC Press

July 2019:350

Hb: 978-0-367-19878-7: £195

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eBook: 978-0-429-24384-4

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