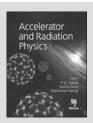
## Accelerator and NEW Radiation Physics

Editors: P. K. Sarkar et al.

Accelerator and Radiation Physics encompasses radiation shielding design and strategies for hadron therapy accelerators, neutron facilities and laser based



accelerators. Afascinating article describes detailed transport theory and its application to radiation transport. Detailed information on planning and design of a very high energy proton accelerator can be obtained from the article on radiological safety of J-PARC. Besides safety for proton accelerators, the book provides information on radiological safety issues for electron synchrotron and prevention and preparedness for radiological emergencies. Different methods for neutron dosimetry including LET based monitoring, time of flight spectrometry, track detectors are documented alongwith newly measured experimental data on radiation interaction with dyes, polymers, bones and other materials. Design of deuteron accelerator, shielding in beam line hutches in synchrotron and 14 MeV neutron generator, various radiation detection methods, their characterization, dose mapping procedures and simulation of radiation environment are also discussed.

Audience: Postgraduate Students, Librarians, Teachers and Professionals

2013 358 pp. 164 Figs. 43Tbls. 185 x 240 906g Hardback ISBN: 978-81-8487-182-1 £ 74.95 / US\$ 129.95



# **Advanced Methods of Mathematical Physics**

Second Edition

R. S. Kaushal, D. Parashar

**Audience:** Postgraduate Students, Physicists, Chemists, Mathematicians, Engineers, Bioscientists,

iviatriematicians, Engineers, biost

**Economists** 

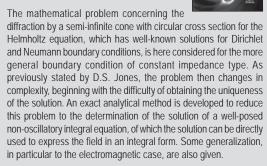
2008 542 pp. 93Figs. 160 x 240 960g Hardback ISBN: 978-1-84265-409-5 £ 47.50 / US\$ 95.00



#### Alpha Science Series on Wave Phenomena

# Advanced Theory of Diffraction by a Semi-infinite NEW Impedance Cone

J. M. L. Bernard



Audience: Postgraduate Students, Professionals and Researchers

2014 170 pp. 14Figs. 160 x 240 438g Hardback ISBN: 978-1-84265-776-8 £ 59.95 / US\$ 98.95



#### **Analytical Engineering Mechanics**

Sujit K. Bose, D. Chattoraj, Dilip K. Pratihar

Audience: Undergraduate and Postgraduate Students, Researchers and Professionals

2012 644 pp. 419 Figs. 185 x 240 1287g Hardback ISBN: 978-1-84265-699-0 £ 59.95 / US\$ 119.95

\ TEXTBOOK /

# Ancient Indian Astronomy and Contributions of Samanta Chandra Sekhar

Editor: L. Satpathy

Audience: Postgraduate Students & Reasearchers

2003 386 pp.

185 x 240 1000g Hardback ISBN: 978-81-7319-432-0 £ 80.00 / US\$ 150.00



# Architecture, Programming and Applications of Advanced Microprocessors

Second Edition

A. K. Ganguly

Audience: Undergraduate – Postgraduate Students

2012 426 pp. 210Figs. 82Tbls. 185 x 240 1008g Hardback ISBN: 978-1-84265-713-3 £ 44.95 / US\$ 79.95



#### Alpha Science Series on Wave Phenomena

#### Asymptotic Methods in Short-Wavelength Diffraction Theory

V. M. Babich, V. S. Buldyrev

Audience: Postgraduate Students, Professionals & Researchers

2009 495 pp. 89Figs. 160 x 240 1000g Hardback ISBN: 978-1-84265-232-9 £ 75.00 / US\$ 150.00



#### Atomic and Molecular Physics Introduction to Advanced Topics

Editors: R. Srivastava et al.

Audience: Postgraduate Students, Librarians, Teachers

and Professionals

2012 244 pp.

160 x 240 575g Hardback ISBN: 978-81-8487-169-2 £ 59.95 / US\$ 98.00



### Atomic Structure and Collision Processes

Editor: Man Mohan

Audience: Postgraduate Students, Researchers & Teachers

in Physics

2010 368 pp. 113Figs. 46Tbls. 185 x 240 900g Hardback ISBN: 978-81-7319-811-3 £ 57.50 / US\$ 115.00



#### Atoms and Molecules in Laser and External Fields

Editor: Man Mohan

Audience: Postgraduate Students, Researchers & Teachers

in Physics

2008 184 pp. 94Figs. 5Tbls. 185 x 240 600g Hardback ISBN: 978-1-84265-513-9 £ 57.50 / US\$ 115.00



#### Atoms, Molecules and Lasers

K. P. R. Nair

Audience: Senior Undergraduate and Postgraduate Students, Teachers and Researchers

2006 426 pp. 173Figs. 39Tbls. 160 x 240 1000g Hardback ISBN: 978-1-84265-054-7 £ 35.00 / US\$ 69.95



#### **Basic Plasma Physics**

Basudev Ghosh



CONTENTS: Preface / Introductory / Basic Plasma Characteristics / Orbit Theory of Plasma / Fluid Description of Plasmas / Waves in Plasmas / Kinetic Theory of Plasma / Transport Processes in Plasmas / Stability of Fluid Plasma



/ Nonlinear Effects in Plasma / Plasma through Experiments / Some Elementary Class-room Experiments / Appendixes / Index.

2014 266 pp. 67Figs. 15Tbls. 160 x 240 538g Hb ISBN: 978-1-84265-856-7 £ 34.95 / US\$ 64.95



#### **Basic Thermodynamics**

E. Guha

Audience: Undergraduate Students

£22.00 / US\$44.00

Solutions Manual: Available for Teachers (ISBN: 978-1-84265-034-9)

2001 287 pp. 105Figs. 160 x 240 750g Hardback ISBN: 978-1-84265-000-4

TEXTBOOK /



www.alphasci.com

#### **Biophysics**

Second Edition

V. Pattabhi. N. Gautham

Audience: Postgraduate students as well as Biologists,

Biochemists, Biomedical Engineers, Physicists

and Pharmacologists

2009 276 pp. 193Figs. 185 x 240 600g Hardback ISBN: 978-1-84265-517-7 £ 59.95 / US\$ 115.00



#### **Celestial Mechanics**

**Recent Trends** 

Editor: Bhola Ishwar

Audience: Graduate-Undergraduate Students, Teachers &

Researchers in Physics

2006 348 pp.

185 x 240 900g Hardback ISBN: 978-81-7319-766-6 £ 74.95 / US\$ 150.00



#### **Circuit Analysis**

Md. Abdus Salam

Audience: Undergraduate Students in Electrical Engineering

2007 524 pp. 434Figs. 185 x 240 1150g Hardback ISBN: 978-1-84265-413-2 £ 44.95 / US\$ 89.95



#### **Classical Electrodynamics**

S. P. Puri

Audience: Undergraduate and Postgraduate Students

2011 736 pp. 138Figs. 160 x 240 1200g Hardback ISBN: 978-1-84265-658-7 £ 54.95 / US\$ 98.95



#### Classical Mechanics

P. V. Panat

Audience: Under-Postgraduate Students and Teachers

2005 320 pp. 107Figs. 49Tbls. 185 x 240 850g Hardback ISBN: 978-1-84265-216-9 £ 29.95 / US\$ 59.95





#### **Classical Mechanics**

Suresh Kumar Sinha

Audience: Undergraduate - Postgraduate Students

and Teachers

2009 496 pp. 85Figs. 185 x 240 1050g Hardback ISBN: 978-1-84265-578-8 £ 34.95 / US\$ 69.95



### Classical Mechanics A Textbook

Suresh Chandra

Audience: Undergraduate and Postgraduate Students, Professionals and Researchers

2009 344 pp. 70 Figs. 185 x 240 710g Hardback ISBN: 978-1-84265-552-8 £ 32.50 / US\$ 64.95



# Computational Fluid Dynamics

G. Biswas, S. Mukherjee

COMPUTATIONAL FLUID DYNAMICS is an effort to cover a range of topics, - from elementary concepts for the uninitiated students to state-of-the-art algorithms useful for the



practitioners. The contents begin with preliminaries, in which the basic principles and techniques of Finite Difference (FD), Finite Volume (FV) and Finite Element (FE) methods are described using detailed mathematical treatment. The methodologies are explained systematically using step-by-step hand calculations. These introductory chapters are followed by the state-of-the-art methods and algorithms, including, Semi Implicit Pressure Linked Equations (SIMPLE) and Marker and Cell (MAC) family of algorithms that are widely adopted in various commercial codes. These advanced chapters use general forms of governing equations, boundary conditions, and initial conditions encountered in CFD. Finally, the modeling of free surface flows has been covered as a special topic.

Audience: Undergraduate and Postgraduate Students, Professionals, Researchers and Industry

2014 242 pp. 160 x 240 530g Hardback ISBN: 978-1-84265-738-6 £ 39.95 / US\$ 74.95



#### **Computer Applications** in Physics NEW with Fortran, Basic and C

Third Edition

Suresh Chandra, M. K. Sharma

Because of encouraging response for first two editions of the book and for taking into account valuable suggestion from teachers as well as students, the text for Interpolation, Differentiation, Integration, Roots of an Equation, Solution of Simultaneous Equations, Eigenvalues and Eigenvectors of Matrix, Solution of Differential Equations, Solution of Partial Differential Equations, Monte Carlo Method and Simulation, Computation of some Functions is improved throughout and presented in a more systematic manner by using simple language. These techniques have vast applications in Science, Engineering and Technology.

The C language is becoming popular in universities, colleges and engineering institutions. Besides the C language, programs are written in FORTRAN and BASIC languages. Consequently, this book has rather wide scope for its use. Each of the topics are developed in a systematic manner; thus making this book useful for graduate, postgraduate and

Audience: Undergraduate & Postgraduate Students

2014 506 pp. 17Figs. 8Tbls. 160 x 240 873g Hardback ISBN: 978-1-84265-817-8 £44.95 / US\$ 79.95



#### **Condensed Matter Physics**

Editors: B. K. Agrawal, H. Prakash

Audience: Postgraduates, Reaserchers & Professionals

1999 321 pp. 138Figs. 29Tbls. 185 x 240 820g Hardback ISBN: 978-81-7319-323-1

£82.00 / US\$ 160.00



#### A Course on Classical Mechanics

Madhumangal Pal

Audience: Undergraduate – Postgraduate Students

2009 276 pp. 36 Figs. 185 x 240 650g Hardback ISBN: 978-1-84265-518-4 £ 29.95 / US\$ 59.95

TEXTBOOK /



#### **Crystalline and Non** Crystalline Solids

Preparation and Characterization



Editors: C. F. Desai, P. H. Soni, K. R. Jotania, M. B. Sureshkumar



The present book is a compilation of research papers pertaining to a broad range of materials namely, crystalline solids, non-crystalline or semicrystalline solids, polymer composites, glasses, etc. encompassing dimensions varying through bulk crystals to thin films to nanocrystals, contributed by various scientists/researchers and covers a wide range of materials and their science, from kidney stone crystals to fly-ash, and would hopefully attract interest of an equally broad spectrum of materials scientists.

**Audience:** Under-Postgraduate Students, Library, Professionals and Researchers

2014 120 pp. 210 x 280 577g Hardback ISBN: 978-81-8487-384-9 £59.95 / US\$ 98.95



#### Alpha Science Series on Wave Phenomena **Diffraction Theory**

#### The Sommerfeld-Malyuzhinet Technique

V. M. Babich, M. A. Lyalinov, V. E. Grikurov

Audience: Postgraduate Students Professionals & Researchers

2008 228 pp. 38Figs. 185 x 240 590g Hardback ISBN: 978-1-84265-310-4 £59.95 / US\$ 120.00



#### **EINSTEIN**

#### His Life and Works

K.A.I.L. Wijewardena Gamalath

Audience: Students, Teachers and Scientists

2012 396 pp. 160 x 240 800g Hardback ISBN: 978-1-84265-734-8 £ 39.95 / US\$ 69.95



## **Electromagnetic Field Theory and Wave Propagation**

Uma Mukherji

Audience: Under-Postgraduate Students and Teachers

2006 378 pp. 138Figs. 185 x 240 900g Hardback ISBN: 978-1-84265-273-2 £ 34.95 / US\$ 69.95



Electromagnetic ields and Waves

### Electromagnetic Fields and Waves

Second Edition

Jiao Qixiang



**CONTENTS:** Preface of the Second Edition / Preface of the First Edition / Symbols,

Parameter and Vector Expressions / Vector Analysis / Electrostatic Fields / Constant Magnetic Field / Steady Electric Field / Solutions of Electrostatic Field Boundary Value Problem / Alternating Electromagnetic Fields / Propagation of Plane Wave in Infinite Medium / Reflection and Refraction of Electromagnetic Waves / Two-conductor Transmission Lines – Transverse Electromagnetic Wave Guiding System / T E Mode, T M Mode Transmit System – Waveguide / Electromagnetic Radiation.

Audience: Undergraduate and Postgraduate Students, Researchers, Teachers and Professionals

2013 452 pp. 452Figs. 12Tbls. 185 x 240 1120g Hardback ISBN: 978-1-84265-560-3 £ 64.95 / US\$ 120.00



# Electromagnetic Phenomenon Related to Earthquakes and Volcanoes

Editor: Birbal Singh

Audience: Teachers, Research Students & Scientists

2008 264 pp. 141Figs. 18Tbls. 185 x 240 700g Hardback ISBN: 978-81-7319-858-8 £ 49.50 / US\$ 98.00



# Electromagnetic Theory and Applications

NEW

Second Edition

A. K. Saxena

CONTENTS: Preface / Needed Vector Algebra

/ Electrostatics / Electric Fields in Dielectrics / Boundary Value Problems / Magnetostatics / Maxwell's Equations / Electromagnetic Waves Incident at an Interface / Transmission Lines and Wave Guides / Electromagnetism and Microwaves / Retarded Potentials and Radiating Systems / Optical Fibres (An Introduction) / Appendix A: The Complex Poynting Theorem / References / Index.

Audience: Senior Undergraduate & Postgraduate Students

2013 290 pp. 150Figs. 185 x 240 680g Hardback ISBN: 978-1-84265-838-3 £ 39.95 / US\$ 79.95



### Electromagnetic Theory and Wave Propagation, Second Edition

S. N. Ghosh

Audience: Undergraduate Students

2002 276 pp. 109Figs. 13Tbls. 160 x 240 600g Hardback ISBN: 978-1-84265-097-4 £ 35.00 / US\$ 69.95 \ TEXTBOOK /



# Electron Collision Processes in Atomic and Molecular Physics

Editors: P. C. Minaxi Vinodkumar



NEW

CONTENTS: Preface / Total Cross Sections of
Charge particle collisions with Molecular Targets: Measurements and
Calculations / Theoretical Estimations and Experimental
measurements on Ionization Cross Sections of selected Atoms and
Molecules / Applications of Charge particle Collision Data and
Properties of selected Atomic and Molecular Targets.

Audience: Postgraduate Students, Teachers, Library

and Professionals

2014 230 pp.

160 x 240 535g Hardback ISBN: 978-81-8487-343-6 £ 54.50 / US\$ 94.95

4.95

#### **Electronics**

#### Circuits and Analysis

Second Edition

NEW

Dinesh C. Dube

CONTENTS: Acknowledgements / Physical Constant / Introduction to Semiconductors / The p-n Junction and Diode Applications / The

Junction Transistor / DC Circuit Design and Analysis / Small Signal BJT Amplifiers: Analysis using r-Parameters / Small Signal Amplifiers and Z, Y and h-Parameters / Feedback in Amplifiers / Integrated Circuit Fabrication / Field-Effect Transistors (FETs) / FET Circuits and Applications / Power Amplifiers / Frequency Response, Coupling Methods, Multistage Amplifiers / Differential and Operational Amplifiers / Operational Amplifier Applications / Nanoelectronics / Index.

Audience: Undergraduate and Postgraduate Students

2013 438 pp. 507 Figs. 185 x 240 925g Hardback ISBN: 978-1-84265-755-3 £ 34.95 / US\$ 64.95



Electronics

#### **Elementary Analytical Mechanics**

Sujit Kumar Bose, Debidas Chattoraj

Audience: Advanced Undergraduate Students and Engineers

Solutions Manual: Available for Teachers (ISBN: 978-1-84265-041-7)

2000 468 pp. 241Figs. 185 x 240 1050g Hardback ISBN: 978-1-84265-004-2 £ 35.00 / US\$ 69.95 TEXTBOOK /



#### **Elementary Biophysics**

Second Edition

P. K. Srivastava

Audience: Undergraduate & Postgraduate Students

2011 288 pp. 110Figs. 185 x 240 660g Hardback ISBN: 978-1-84265-483-5 £ 29.95 / US\$ 59.95





#### **Engineering Materials**

Vaibhay Shriyastaya

FORTHCOMING A

CONTENTS: States of Matter / Crystal Structure and Indexation / Growth Techniques / Defects in Solids / Band Theory of Solids / Conduction in Metals / Conduction in Metals-Superconductivity / Thermal Behaviour of Materials / Semiconductor Materials: Types and Behaviour / Semiconductor Devices / Magnetism in Materials / Dielectric Nature of Materials / Optical Properties of Materials / Bulk to Nano Transformation in Materials / Commercially Exhausted Materials & Future Materials.

**Audience:** Under-Postgraduate Students and Researchers

2015 300 pp. 185 x 240 Hardback ISBN: 978-81-8487-165-4 £ 32.95 / US\$ 59.95



#### Engineering Physics, Third Edition

Uma Mukherji

Audience: Undergraduate Students and Teachers

2010 534 pp. 288Figs. 160 x 240 1000g Hardback ISBN: 978-1-84265-643-3 £ 44.95 / US\$ 79.95



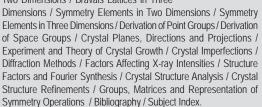


#### Essentials of Crystallography

Second Edition M. A. Wahab

NEW

CONTENTS: Preface to the Second Edition / Preface to the First Edition / Bravais Lattice in Two Dimensions / Bravais Lattices in Three



Audience: Postgraduate Students & Researchers

2014 356 pp. 230Figs. 62Tbls. 185 x 240 775g Hardback ISBN: 978-1-84265-841-3 £ 49.95 / US\$ 98.00



#### **Excitation of Atomic Spectra**

Igor I. Sobelman, Leonid Vainshtein

Audience: Students, Researchers & Teachers

2006 340 pp.

160 x 240 800g Hardback ISBN: 978-1-84265-233-6 £ 49.95 / US\$ 98.00



#### A First Book of Quantum Field Theory, Second Edition

A. Lahiri, P. B. Pal

Audience: Senior Undergraduate & Graduate Students

2005 397 pp. 35Figs. 160 x 240 800g Hardback ISBN: 978-1-84265-249-7 £ 35.00 / US\$ 69.95



### Functional Magnetic Resonance Imaging: Novel Transform Methods

Ajay V. Deshmukh, Vikram M. Gadre

Audience: Graduate Students, Teachers, Researchers & Professionals

2008 130 pp. 78Figs. 12Tbls. 160 x 240 400g Hardback ISBN: 978-81-7319-865-6 £ 44.95 / US\$ 89.95

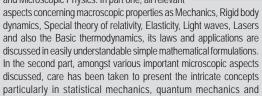


### Fundamental Physics An Introduction

S. K. Chatterjee



Fundamental Physics: An Introduction develops the basic principles and laws of fundamental Physics and presents in two parts i.e. Macroscopic and Microscopic Physics. In part one, all relevant



semiconductor Physics in a lucid way best acceptable for the students. **Audience:** Undergraduate and Postgraduate Students

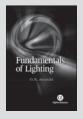
2014 392 pp. 178 Figs. 160 x 240 704g Hb ISBN: 978-1-84265-821-5 £ 44.95 / US\$ 79.95



### Fundamentals of Lighting

O. N. Awasthi

FUNDAMENTALS OF LIGHTING is a comprehensive guide to the theory and practice of lighting design i.e. principles of physics for light production, light measurement techniques



and systems, light sources including the recent developments in lamp technology, luminaries, daylighting including the architectural lighting, lighting design methods (lumen as well as point by point method) with illustrations. It also contains discussions on glare and its effects on vision alongwith a detailed discussion on unified glare rating (UGR) and procedure for its evaluation.

Audience: Undergraduate and Postgraduate Students, Teachers and Researchers

2014 454 pp. 224Figs. 22Tbls. 160 x 240 813g Hardback ISBN: 978-1-84265-879-6 £ 54.95 / US\$ 98.95



### Fundamentals of X-Ray Crystallography, Second Edition

LIANG Dongcai

**Audience:** Postgraduate Students, Researchers

and Teachers

2011 478 pp. 242Figs. 160 x 240 Hardback ISBN: 978-1-84265-571-9 £ 64.95 / US\$ 129.95



#### Alpha Science Series on Wave Phenomena Geometrical Optics in Engineering Physics

Yury A. Kravtsov

Audience: Doctoral & Postgraduate Students, Teachers and Researchers

2005 375 pp. 121Figs. 160 x 240 800g Hardback ISBN: 978-1-84265-159-9 £ 65.00 / US\$ 130.00



Prices and Pub Dates subject to change
ISBN Prefix: Alpha Science — 978-1-84265; Narosa — 978-81-7319, 978-81-85198, 978-81-8487
USD Price valid for North America Only / GBP Price valid for Rest of the World

#### Green's Function in Condensed Matter Physics

Wang Huaiyu

Audience: Postgraduate Students, Researchers & Teachers

2012 446 pp. 146Figs. 160 x 240 1019g Hardback ISBN: 978-1-84265-714-0 £ 69.95 / US\$ 130.00



### A Guide to Synchrotron Radiation Science FORTHCOMING

Makoto Watanabe, Shigeru Sato, lan Munro, Gyanendra Singh Lodha

CONTENTS: Preface / Introduction — The Characteristics of Synchrotron Radiation and its Importance / Synchrotron Radiation is Emitted by Moving Electrons / The Light Source / The Optical Response of Matter / Optical Techniques / The Spectroscopy of Gasses in the Vacuum Ultraviolet and Soft X-Ray Regions / The Spectroscopy of Solids in the Vacuum Ultraviolet and Soft X-Ray Regions / Applications of Synchrotron Radiation in Manufacturing Processes / Crystal Structure Analysis by X-Ray Diffraction / Local Structure Analysis using EXAFS / Elemental and Structural Analysis using X-Ray Fluorescence / Inelastic X-Ray Scattering / Infrared Spectroscopy / Imaging / Appendices / Index.

Audience: Undergraduate and Postgraduate Students, Professionals and Researchers

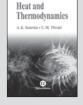
2015 250 pp. 160 x 240 Hardback ISBN: 978-81-8487-373-3 £ 54.95 / US\$ 98.95



# Heat and NEW Thermodynamics

A. K. Saxena, C. M. Tiwari

HEAT AND THERMODYNAMICS covers basic ideas of Heat and Thermodynamics, Kinetic Theory and Transport Phenomena, Real Gases, Liquefaction and Production and Measurement



of very Low Temperatures, The First Law of Thermodynamics, The Second and Third Laws of Thermodynamics and Heat Engines and Black Body Radiation.

Audience: Undergraduate and Postgraduate Students

2014 328 pp. 145Figs. 160 x 240 620g Hardback ISBN: 978-1-84265-902-1 £ 29.95 / US\$ 54.95



#### Higher-Order Systems in Classical Mechanics

B. Talukdar, U. Das

Audience: Advanced Graduate Students and Researchers

2008 236 pp. 185 x 240 650g Hardback ISBN: 978-81-7319-845-8 £ 49.95 / US\$ 98.00



#### **Introduction to Analytical Mechanics**

K.A.I.L.W. Gamalath

Audience: Undergraduate and Graduate Students

2011 294 pp. 121Figs. 160 x 240 600g Hardback ISBN: 978-1-84265-668-6 £ 29.95 / US\$ 54.95



## Introduction to Atomic and Molecular Spectroscopy

V. K. Jain

Audience: Senior Under and Graduate Students, Researchers & Teachers

2007 394 pp. 172Figs. 185 x 240 950g Hardback ISBN: 978-1-84265-357-9 £ 32.00 / US\$ 64.00



## Introduction to Condensed Matter Physics

K. C. Barua

Audience: Under-Postgraduate Students in Physics

2007 330 pp. 194Figs. 13Tbls. 185 x 240 800g Hardback ISBN: 978-1-84265-347-0 £ 34.95 / US\$ 69.95



#### Introduction to Electrodynamics

A. Z. Capri, P. V. Panat

Audience: Under-Postgraduate Students & Teachers

2002 482 pp. 143Figs. 160 x 240 1000g Hardback ISBN: 978-1-84265-065-3 £ 38.00 / US\$ 76.00



www.alphasci.com

#### **Introduction to General Relativity**

R. Parthasarathy

FORTHCOMING A

Audience: Undergraduate and Postgraduate Students

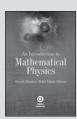
2015 250 pp. 160 x 240 Hardback ISBN: 978-1-84265-949-6 £ TBA / US\$ TBA

TEXTBOOK /

#### An Introduction NEW to Mathematical Physics

S. Chandra, M. K. Sharma

An Introduction to Mathematical Physics discusses the Curvilinear Coordinates, Vector Space, Matrices, Tensors, Beta Function, Gamma Function, Error Function, Dirac Delta



Function, Green Function Method, Complex Analysis, Differential Equations, Bessel Function, Legendre Function, Laguerre Function, Hermite Function, Fourier Series, Fourier Transform and Laplace Transform. Each topic is explained with the help of simple exercises using simple language.

**Audience:** Under-Postgraduate Students & Researchers

2013 458 pp. 22Figs. 160 x 240 788a Hb ISBN: 978-1-84265-783-6 £49.95 / US\$ 98.00



#### An Introduction to **Nanophysics** and FORTHCOMING A Nanotechnology

A. Kapoor, P. Goswami

**CONTENTS:** Introduction / Fundamental



Audience: Postgraduate Students, Teachers and

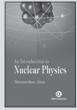
Researchers

2015 600 pp. 185 x 240 Hardback ISBN: 978-1-84265-600-6 £59.95 / US\$ 99.95



#### An Introduction to **Nuclear Physics** Yatramohan Jana

CONTENTS: Preface / Acknowledgement / Introduction: General Survey of Nuclear Properties / Two-nucleon Potential: Deuteron Problem-I / Neutron-Proton Scattering / Protonj-



Proton Scattering / Deuteron Problem-II / High-Energy Nucleon-Nucleon Scattering / Meson Theory of Nuclear Force / Nuclear Model: Semi-classical Model / Nuclear Shelll Model / Quadrupole Moment of the Nucleus / Collective Model / Nuclear Reactions: Nuclear Reactions: General Understanding / Compound Nuclear Reactions / Optical Model / Direct Reactions / Nuclear Decay: Alpha Decay / Beta Decay / Electro-magnetic Transition / Radiative Transition in the *n-p* System / Appendix / Bibliography / Index.

NEW ,

Audience: Undergraduate and Postgraduate Students, Teachers and Researchers

2015 768 pp. 174Figs. 44Tbls. 160 x 240 1135g Hardback ISBN: 978-1-84265-924-3 £54.95 / US\$ 99.95



#### Introduction to Quantum Mechanics

Vimal Kumar Jain

Audience: Undergraduate and Postgraduate Students

2010 512 pp. 59Figs. 185 x 240 1000g Hardback ISBN: 978-1-84265-602-0 £ 49.95 / US\$ 89.95





#### **Introduction to Statistical Mechanics**

S. K. Sinha

Audience: Undergraduate & Postgraduate Students, Researchers & Professionals

2005 465 pp. 98Figs. 185 x 240 1000g Hardback ISBN: 978-1-84265-302-9 £ 49.95 / US\$ 95.00





#### An Introduction to Thermodynamics and Statistical Mechanics

A. K. Saxena

Audience: Undergraduate and Postgraduate Students

2010 344 pp. 116Figs. 185 x 240 830g Hardback ISBN: 978-1-84265-528-3 £39.95 / US\$79.95





Prices and Pub Dates subject to change ISBN Prefix: Alpha Science — 978-1-84265; Narosa — 978-81-7319, 978-81-85198, 978-81-8487 USD Price valid for North America Only / GBP Price valid for Rest of the World

www.alphasci.com

Physics 9

### An Introductory Course of Statistical Mechanics

Palash B. Pal

Audience: Undergraduate & Postgraduate Students in

**Physics** 

2008 396 pp. 56Figs. 160 x 240 1000g Hardback ISBN: 978-1-84265-436-1 £ 39.95 / US\$ 79.95





### An Isolated Atomic Particle at Rest in Free Space

Editors: E. Norval Fortson, Ernest M. Henley,

Warren G. Nagourney

Audience: Postgraduate Students, Teachers

and Researchers

2006 170 pp. 15Tbls. 160 x 240 600g Hardback ISBN: 978-1-84265-161-2 £ 42.00 / US\$ 85.00



#### Isotopes in Hydrology, Hydrogeology and Water Resources

B. P. Singh, Bhishm Kumar

Audience: Graduate Students, Teachers & Professionals

2005 208 pp. 78Figs. 160 x 240 500g Hardback ISBN: 978-81-7319-690-4 £ 39.95 / US\$ 79.95



## Laser and Bose Einstein Condensation Physics

Editors: Man Mohan, Anil Kumar, Aranya B. Bhattacherjee, Anil Kumar Razdan

**Audience**: Postgraduate Students and Researchers in

**Physics** 

2010 316 pp. 142Figs. 20Tbls. 185 x 240 800g Hardback ISBN: 978-81-8487-064-0 £ 69.95 / US\$ 139.00

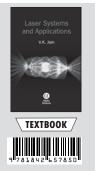


# Laser Systems and Applications

V. K. Jain

Audience: Undergraduate and Postgraduate Students

2013 264 pp. 106Figs. 160 x 240 540g Hardback ISBN: 978-1-84265-785-0 £ 27.50 / US\$ 49.95



## Magnetic Properties of High-Temperature Superconductors

M. R. Koblischka

Audience: Doctoral Student, Researchers & Students

2009 284 pp. 182Figs. 160 x 240 660g Hardback ISBN: 978-1-84265-149-0 £ 75.00 / US\$ 150.00



#### Mathematical and Experimental Physics

Editors: S. Jayalakshmi, J. Arokiaraj et al.

Audience: Undergraduate and Postgraduate Students

2010 216 pp. 101Figs. 14Tbls. 160 x 240 480g Hardback ISBN: 978-81-8487-057-2 £ 39.95 / US\$ 69.95



#### **Mathematical Physics**

A. K. Saxena

NEW

MATHEMATICAL PHYSICS aims to serve as a text book for B.Sc. and M.Sc. syllabi of physics. It covers Vector Analysis, Matrices and Determinants, Complex Variables, Ordinary Differential Equations, Special



Equations and Useful Polynomials of Mathematical Physics, Beta and Gamma Functions, Fourier Series and Fourier Transform, Laplace and Inverse Laplace Transforms, Tensors, Green's Function and Partial Differential Equations.

Audience: Undergraduate and Postgraduate Students

2015 718 pp. 185 x 240 1325g Hb ISBN: 978-1-84265-861-1 £ 59.95 / US\$ 98.95



www.alphasci.com

#### Mean Field Description of Nuclei

Editor: Y. K. Gambhir

Audience: Postgraduate Students, Teachers & Researchers

2006 368 pp.

160 x 240 900g Hardback ISBN: 978-81-7319-708-6 £ 52.50 / US\$ 98.00



#### Mesons and Quarks

Editors: A. B. Santra, S. Kailas, R. S. Bhalerao

Audience: Students, Teachers and Researchers

2004 360 pp. 142Figs. 185 x 240 900g Hardback ISBN: 978-81-7319-589-1 £ 65.00 / US\$ 130.00



#### Microcontroller 8051

D. Karuna Sagar

Audience: Undergraduate and Postgraduate Students

in Physics

2010 338 pp. 89Figs. 185 x 240 800g Hardback ISBN: 978-1-84265-592-4 £ 39.95 / US\$ 79.95





#### **Microwave Devices and Applications**

D.C. Dube

Audience: Undergraduate Students, Teachers and Researchers in Physics and Electrical Engineering

2011 244 pp. 181Figs. 160 x 240 540g Hardback ISBN: 978-1-84265-604-4 £ 29.95 / US\$ 59.95



### Modern Physics Concepts and Applications

S. Puri

Audience: Undergraduate and Engineering Studentss

2004 390 pp. 106Figs. 13Tbls. 185 x 240 850g Hardback ISBN: 978-1-84265-184-1 £ 29.00 / US\$ 59.95



#### Molecular Physics

#### Kinetic Theory and Thermodynamics

S. K. Sinha, T. K. Dey

Audience: Undergraduate & Graduate Students

2006 538 pp. 124Figs. 185 x 240 1300g Hardback ISBN: 978-1-84265-349-4 £ 39.95 / US\$ 79.95



#### **Molecular Spectroscopy**

Suresh Chandra

Audience: Post Graduate Students of Physics, Chemistry and Biotechnology, Teachers and Researchers

2009 274 pp. 112Figs. 160 x 240 570g Hardback ISBN: 978-1-84265-608-2 £ 39.95 / US\$ 79.95



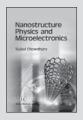


### Nanostructure Physics and Microelectronics

Sujaul Chowdhury



Part I of the book comprising of 7 chapters covers Microelectronics: Physics and Processing with emphasis on both Physics and microelectronic processing. The chapters on



theory of junctions and on microelectronic processing will attract particular interest of the readers. Part II comprising of 8 chapters discusses pure Physics of semiconductor nanostructures discussing structure, band model and Physics of about 12 basic nanostructures in detail. Thorough discussion and extensive use of diagrams help readers become adept in drawing band model in any discussion on nanostructure Physics. The Nanostructure Physics of isolated Quantum Well and of MODFET are covered in considerable detail alongwith applications of magnetic field to nanostructures.

**Audience:** Graduate Students, Libraries, Scientists and Researchers

2015 390 pp. 160 x 240 700g Hardback ISBN: 978-1-84265-905-2 £ 49.95 / US\$ 94.95



#### **Neutrinoless Double Beta Decay**

Editors: V. K. B. Kota, U. Sarkar Audience: Teachers and Researchers

2008 164 pp. 31Figs. 160 x 240 480g Hardback ISBN: 978-81-7319-876-2 £ 34.95 / US\$ 69.95



#### **Nonlinear Dynamics**

Editors: M. Daniel, S. Rajasekar

Audience: Students, Teachers and Researchers in Physics, Applied Mathematics and Engineering

2009 416 pp. 150Figs. 185 x 240 850g Hardback ISBN: 978-81-7319-941-7 £ 69.95 / US\$ 139.95



#### Nonlinear Dynamics Integrability and Chaos

Editors: M. Daniel, K. M. Ramizhmani, R. Sahadevan

Audience: Postgraduate & Doctoral Students & Researchers

2000 482pp 124Figs. 155 x 230 900g Hardback ISBN: 978-81-7319-326-2 £ 85.00 / US\$ 170.00



## Nonlinear Dynamics and Computational Physics

Editor: V. B. Sheorey

Audience: Advanced Postgraduate Students & Research

Scientists

1999 259 pp. 99Figs. 185 x 240 760g Hardback ISBN: 978-81-7319-283-8 £ 85.00 / US\$ 170.00



#### **Nuclear and Particle Physics**

S. Chandra, Mohit K. Sharma

Audience: Undergraduate and Postgraduate Students

2012 262 pp. 185 x 240 Hardback ISBN: 978-1-84265-745-4 £ 32.50 / US\$ 59.95



# Nuclear Dynamics at Low and Medium Energies and Nuclear Structure

Editors: Sailajananda Bhattacharya,

Sudhee Ranjan Banerjee

**Audience:** Postgraduate Students & Researchers

in Nuclear Physics

2008 338 pp. 224Figs. 12Tbls. 185 x 240 575g Hardback ISBN: 978-81-7319-820-5 £ 64.95 / US\$ 119.95



#### **Nuclear Physics**

Second Edition

V. Devanathan

Audience: Graduate - Postgraduate Students

2011 422 pp. 78Figs. 46Tbls. 185 x 240 1000g Hardback ISBN: 978-1-84265-659-4 £ 34.95 / US\$ 69.95



#### Nuclear Radiation Detection, Measurements and Analysis

K. Muraleedhara Varier

Audience: Graduate Students, Researchers & Professionals

2009 312 pp. 180Figs. 13Tbls. 185 x 240 900g Hardback ISBN: 978-1-84265-556-6 £ 49.95 / US\$ 98.95



#### Nuclei at Extremes of Isospin and Mass

Editors: A. Ansari, R. K. Choudhury

Audience: Students and Researchers in Nuclear Physics

2005 434 pp. 181Figs. 160 x 240 1000g Hardback ISBN: 978-81-7319-596-9 £ 65.00 / US\$ 130.00



#### **Numerical Computational Methods**

Revised Edition

P. B. Patil, U. P. Verma

Audience: Students of Engineering, Computer Science

disciplines, Pure & Appiled Physics

2009 684 pp. 43Figs. 185 x 240 1450g Hardback ISBN: 978-1-84265-509-2 £ 49.95 / US\$ 98.00



#### Numerical Methods in Electromagnetic Fields

V. Subbarao

**Audience**: Undergraduate – Postgraduate Students

2011 202 pp. 41Figs. 160 x 240 485g Hardback ISBN: 978-1-84265-689-1 £ 29.95 / US\$ 44.95



## Numerical Problems in Solid State Physics

M. A. Wahab

**Audience:** Undergraduate and Postgraduate Students

2011 356 pp. 176Figs. 160 x 240 700g Hardback ISBN: 978-1-84265-617-4 £ 34.95 / US\$ 68.95



### Optical Communications Components and Systems

J. H. Franz, V. K. Jain

Audience: Engineering Students, Engineers & Physicists

2000 733 pp. 318Figs. 180 x 240 1375g Hardback ISBN: 978-1-84265-055-4 £ 35.00 / US\$ 69.95



#### Optical Spectroscopy of Semiconductor Nanostructures

E. L. Ivchenko

**Audience:** Doctoral & Postgraduate Students, Teachers

2005 350 pp.

160 x 240 900g Hardback ISBN: 978-1-84265-150-6 £ 65.00 / US\$ 130.00



#### Optoelectronic Devices and Circuits Theory and Applications

A. K. Ganguly

Audience: Undergraduate Students

2007 244 pp. 157Figs. 185 x 240 600g Hardback ISBN: 978-1-84265-373-9 £ 32.50 / US\$ 65.00



#### Pedagogical Problems in Lattice Dynamics

Editors: *N. Krishnamurthy, P. Palanichamy*Audience: Postgraduate Students, Professionals and Researchers of Physics

2009 166 pp. 76 Figs. 41Tbls. 185 x 240 550g Hardback ISBN: 978-1-84265-555-9 £ 34.95 / US\$ 69.95



#### **Photonics and Quantum Structures**

Editors: D. Mohanta, Gazi A. Ahmad

Audience: Students, Researchers and Scientists

2012 172 pp. 93Figs. 160 x 240 458g Hardback ISBN: 978-81-8487-098-5 £ 44.95 / US\$ 84.95



#### Physics and Astrophysics of Hadrons and Hadronic Matter

Editor: A. B. Santra

Audience: Graduate Students, Researchers & Teachers

2008 344 pp. 138Figs. 16Tbls. 185 x 240 900g Hardback ISBN: 978-81-7319-881-6 £ 45.00 / US\$ 89.95



#### **Physics for Engineering Applications**

Sanjiv Puri

Audience: Undergraduate Students & Professionals in Physics

2010 670 pp. 195Figs. 185 x 240 1380g Hardback ISBN: 978-1-84265-601-3 £ 54.95 / US\$ 98.95



9 7 8 1 8 4 2 6 5 6 0 1 3

#### **Physics of Atoms and Molecules**

Suresh Chandra

Audience: Undergraduate and Postgraduate Students

2010 312 pp. 60Figs. 78Tbls.

160 x 240 Hardback ISBN: 978-1-84265-627-3 £ 39.95 / US\$ 79.95



#### Physics of Semiconductor Devices IWPSD-2003, Two Volume Set

Editors: K. N. Bhat, A. Dasgupta

Audience: Graduate & Postgraduate Students, Teachers &

Researchers

2004 623 pp.

180 x 240 2600g Hardback ISBN: 978-81-7319-567-9 £ 150.00 / US\$ 300.00



### Physics of Solids, Nuclei and Particles

Editor: R. Sahu

Audience: Postgraduate Students & Researchers

2006 198 pp.

160 x 240 550g Hardback ISBN: 978-81-7319-641-6 £ 34.95 / US\$ 69.95



### Plasma Techniques for Film Depositon

M. Konuma

Audience: Undergraduate & Graduate Students, Scientists & Professionals

2005 347 pp. 186Figs. 39Tbls. 160 x 240 700g Hardback ISBN: 978-1-84265-151-3 £ 65.00 / US\$ 130.00



### Principles of Electricity and Magnetism

S. Palit

Audience: Undergraduate Students

2005 314 pp. 185Figs. 160 x 240 750g Hardback ISBN: 978-1-84265-205-3 £ 29.95 / US\$ 59.95



#### **Principles of Modern Physics**

Third Edition

A. K. Saxena

Audience: Under-Postgraduate Students of Physics

2010 966 pp. 365Figs. 73Tbls. 185 x 240 1800g Hardback ISBN: 978-1-84265-620-4 £ 42.50 / US\$ 84.95 TEXTBOOK /

### Principles of Nanoscience and Nanotechnology

M. A. Shah, Tokeer Ahmad

Audience: Postgraduate Students, Researchers & Professionals

2010 220 pp. 45Figs. 160 x 240 520g Hardback ISBN: 978-1-84265-624-2 £ 34.95 / US\$ 54.95



#### **Probing the Sun with High Resolution**

Editors: S. C. Tripathy, P. V. Venkatakrishnan

Audience: Postgraduate Students, Teachers & Researchers

2003 275 pp. 95Figs. 185 x 240 600g Hardback ISBN: 978-81-7319-482-5 £ 75.00 / US\$ 150.00



#### Proceedings of the Nineteenth International Cryogenic Engineering Conference

Editors: *G. G. Baguer, P. Seyfert* Audience: Scientists & Researchers

2003 910 pp.

160 x 240 1650g Hardback ISBN: 978-81-7319-508-2 £ 135.00 / US\$ 270.00



#### **Quantum Mechanics**

Second Edition

V. Devanathan

Audience: Postgraduate Students and Teachers

2011 386 pp. 45Figs. 11Tbls. 185 x 240 750g Hardback ISBN: 978-1-84265-618-1 £ 34.95 / US\$ 68.95



www.alphasci.com

Prices and Pub Dates subject to change ISBN Prefix: Alpha Science — 978-1-84265; Narosa — 978-81-7319, 978-81-85198, 978-81-8487 USD Price valid for North America Only / GBP Price valid for Rest of the World

14 Physics

#### **Quantum Mechanics**

P. K. Ghosh

NEW A

CONTENTS: Preface / Mathematical Preliminaries / The Basic Concepts / The Schrödinger Equation and its Solution / Angular Momentum / Rotations / Spin / The Addition of Angular Momenta / Tensor Operators /



Symmetry Transformations / Discrete Symmetries / Applications / Stationary State Perturbation Theory / Nonperturbative Methods / Methods for Time-Dependent Problems / Interaction of Radiation with Matter / Identical Particles / Many-Particle Systems / The Description of Scattering Processes / Formal Scattering Theory / Potential Scattering: Methods of Solution / Scattering of Identical Particles and Polarized Particles / Interpretation / Bibliography / Index.

Audience: Postgraduate & Undergraduate Students, Professionals and Researchers

2014 908 pp. 72 Figs. 160 x 240 1384g Hb ISBN: 978-1-84265-842-0 £ 64.95 / US\$ 99.95



#### **Quantum Mechanics**

Sujaul Chowdhury



Quantum Mechanics presents comprehensive account of the course for undergraduate students with thorough and complete calculations. The book has been written with the notion that a wave is associated with a material



particle i.e. wave and particle coexist. Heisenberg's uncertainty principle has been described in light of this. A chapter is dedicated to mathematical structure of Quantum Mechanics followed by applications to one-dimensional (1D) problems. Orbital and general angular momentum are treated in two separate chapters, the latter also treats addition of angular momentum. Quantum theory of scattering, matrix formulation of Quantum Mechanics variational method and WKB approximation method have also been discussed.

Audience: Undergraduate and Graduate Students in Physics

2014 314 pp. 66Figs. 160 x 240 633g Hardback ISBN: 978-1-84265-886-4 £ 44.95 / US\$ 84.95



### Quantum Mechanics A Stochastic Approach

R. Vasudevan<sup>†</sup>, K. V. Parthasarthy, R. Ramanathan

Audience: Graduate Students, Researchers & Teachers

2008 308 pp.

185 x 240 750g Hardback ISBN: 978-1-84265-452-1 £ 49.95 / US\$ 99.95



#### **Quark Gluon Plasma**

Editors: Jayati K. Nayak, Tapan K. Nayak, Souray Sarkar



At extremely high temperatures and densities, protons and neutrons may dissolve into a "soup" of quarks and gluons, called the Quark-Gluon

Plasma (QGP). For a few microseconds, shortly after the Big Bang, the Universe was filled with the QGP matter. The search and study of Quark-Gluon Plasma (QGP) is one of the most fundamental research topics of our times. The QGP matter has been probed by colliding heavy ions at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, New York and the Large Hadron Collider at CERN, Geneva. By colliding heavy-ions at a speed close to that of light, scientists aim to obtain – albeit over a tiny volume of the size of a nucleus and for an infinitesimally short instant - a QGP state. This QGP state can be observed by dedicated experiments, as it reverts to hadronic matter through expansion and cooling. This volume presents some of the current theoretical and experimental understandings in the field of QGP.

Audience: Postgraduate Students, Teachers, Professionals and Researchers

2014 204 pp. 160 x 240 467g Hardback ISBN: 978-81-8487-402-0 £ 59.95 / US\$ 98.95



#### Quark Gluon Plasma and Hadron Physics

Editors: *P. K. Sahu, S. C. Phatak, Y. P. Viyogi* **Audience:** Graduate Students, Researchers and Teachers engaged in research

2009 268 pp. 185 x 240 500g Hardback ISBN: 978-81-7319-957-8 £ 49.95 / US\$ 98.00



#### **Relativistic Quantum Mechanics**

R. Parthasarathy

**Audience:** Undergraduate and Postgraduate Students and Researchers

2010 220 pp. 160 x 240 500g Hardback ISBN: 978-1-84265-573-3 £ 29.95 / US\$ 59.95



## Relativistic Quantum Mechanics and Quantum Field Theory

V. Devanathan

Audience: Undergraduate and Postgraduate Students and Researchers

2011 272 pp. 27Figs. 160 x 240 600g Hardback ISBN: 978-1-84265-657-0 £ 34.95 / US\$ 62.50



#### **Research Methodology**

S. Chandra, M. K. Sharma

NEW

Research Methodology explains: How to select topic for doing research; How to review literature; How to collect data; How to analyze the data; How to interpolate between the data;



How to estimate error in the calculations; How to calculate various statistical parameters for the results; How to present results; How to write a research paper and a thesis for the award of degree; What is a research journal; What is the difference between an Editor of a research journal and a Referee for research paper; What is an Editorial Board of a research journal; Information about various techniques required for analyzing the data; Information about the hypotheses testing; Statistical tests and application of computers in research.

Audience: Undergraduate and Postgraduate
Students, Professionals and Researchers

2014 266 pp. 17Figs. 48Tbls. 185 x 240 600g Hardback ISBN: 978-1-84265-803-1 £ 34.95 / US\$ 59.95



#### Scientific and Technical Reports How to Write and Illustrate

B. C. Sharma

NEW

**CONTENTS:** Preface / Nature of Scientific and Technical Communication / An Approach to

Report Writing / How to Prepare Different Parts of a Report / How to Present Data and Illustrate a Report / How to Make a Report More Readable / Appendixes / Bibliography / Index.

Audience: Undergraduate and Postgraduate Students, Researchers and Teachers

2014 174 pp. 39 Figs. 18 Tbls. 160 x 240 427g Hardback ISBN: 978-1-84265-887-1 £ 24.95 / US\$ 44.95



#### Solid State Nuclear Track Detectors and their Applications

Editor: N. L. Singh

NEW

Solid State Nuclear Track Detectors and their Applications discusses radiation and

environments, radon-thoron monitoring in building materials, soil samples, drinking water, plants and neutron flux monitoring alongwith simulation of radiation damage, ion irradiation of materials and its characterizations by means of different techniques such as positron annihilation spectroscopy etc., Fabrication routes to nanotechnology, I-V characteristics of Cu-nanowires, V-VI binary and their pseudo binary, SHI effect on dilute Fe doped alloy, track etch parameters, electrical and dielectric properties of different materials viz. polymeric blends, BFN, nano composites and hexaferrites.

Audience: Postgraduate Students, Librarians, Professionals and Researchers

2013 270 pp. 185 x 240 780g Hb ISBN: 978-81-8487-259-0 £ 49.95 / US\$ 89.95



#### **Solid State Physics**

Structure and Properties of Materials

Second Edition

M. A. Wahab

Audience: Undergraduate & Postgradute Students

Solution Manual: Available on CD

(ISBN: 978-1-84265-537-5)

2005 620 pp. 453Figs. 51Tbls. 185 x 240 1400g Hardback ISBN: 978-1-84265-218-3 £ 34.95 / US\$ 69.95



TEXTBOOK /

### Space Plasma Physics An Introduction

A. C. Das

Audience: Graduate Students and Researchers in the field of Space Plasma Physics

2004 350 pp. 121Figs. 160 x 240 780g Hardback ISBN: 978-81-7319-575-4 £ 47.50 / US\$ 95.00



#### Stability Problems in Applied Mechanics

Asok Kumar Mallik, J. K. Bhattacharjee

Audience: Undergraduate & Postgraduate Students

2005 126 pp. 65Figs. 185 x 240 280g Hardback ISBN: 978-1-84265-309-8 £ 19.95 / US\$ 37.95



# Stark Broadening of Hydrogen and Hydrogenlike Spectral Lines in Plasmas

The Physical Insight

Eugene Oks

Audience: Postgraduate Students & Researchers

2006 166 pp. 39Figs. 185 x 240 525g Hardback ISBN: 978-1-84265-252-7 £ 59.50 / US\$ 120.00

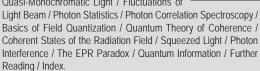


### Statistical and Quantum Optics

S. Chopra



CONTENTS: Preface / Probability and Random Variable / Random Process / Coherence Theory of Optical Fields / Polarization Properties of Quasi-Monochromatic Light / Fluctuations of



Audience: Undergraduate and Postgraduate Students, Teachers and Researchers

2014 218 pp. 69Figs. 2Tbls. 160 x 240 550g Hardback ISBN: 978-1-84265-888-8 £ 34.95 / US\$ 59.95



#### **Statistical Mechanics**

Madhusudan Jana

FORTHCOMING

CONTENTS: Basics of Statistical Mechanics and its Relation to Thermodynamics / Classical Maxwell Boltzmann Statistics and its Applications / Bose Einstein Statistics and its Applications / Properties of Liquid He / Fermi-Dirac Statistics and its Applications, White Dwarfs / Transport Phenomenon – Thermal and Electrical Conductivity, Hall Effect, Magnetoresistance, Viscosity, Diffusion / Phase Transition – Ising Model / Method of Ensembles – Microcanonical, Canonical and Grand Canonical and their Applications to Ideal Gas / Appendices – Physical Constants, Useful Mathematical Results and Reference Books and Web-links.

Audience: Undergraduate and Postgraduate
Students, Professionals and Researchers

2015 250 pp. 160 x 240 Hardback ISBN: 978-1-84265-911-3 £ 34.95 / US\$ 59.95



### Statistical Mechanics An Introduction

Evelyn Guha

Audience: Undergraduate Students of Physics & Chemistry

2008 256 pp. 77Figs. 185 x 240 680g Hardback ISBN: 978-1-84265-335-7 £ 34.95 / US\$ 69.95



### Structure and Properties of Solid State Materials

Editor: B. Viswanathan

Audience: Undergraduate Students of Physics, Chemistry &

Material Science

2006 140 pp. 126Figs. 27Tbls. 185 x 240 520g Hardback ISBN: 978-1-84265-336-4 £ 19.95 / US\$ 39.95



#### **Terrestrial Solar Photovoltaics**

T. Bhattacharya

Audience: Advanced Graduate & Postgraduate Students

1998 285 pp. 180 x 240 410g Paperback ISBN: 978-81-7319-206-7 £ 32.00 / US\$ 64.00



#### A Textbook of Mathematical Physics

Second Edition

Suresh Chandra

Audience: Undergraduate & Postgraduate Students &

Teachers

2006 204 pp. 160 x 240 600g Hardback ISBN: 978-1-84265-234-3 £ 27.50 / US\$ 55.00





# Textbook of Physics for Engineers NEW

Suresh Chandra, Mohit K. Sharma, Monika Sharma

CONTENTS: Preface / Measurements and Errors / Optics / Fiber Optics / Elasticity / Waves and Oscillations / Sound / Appendices / Bibliography / Index.



2015 310 pp. 86Figs. 2Tbls. 160 x 240 635g Hardback ISBN: 978-1-84265-941-0 £ 34.95 / US\$ 59.95



#### Theory of Atomic Spectra

Igor I. Sobelman

Audience: Students, Researchers & Teachers

2006 378 pp.

160 x 240 800g Hardback ISBN: 978-1-84265-203-9 £ 59.95 / US\$ 120.00



#### Alpha Science Series on Wave Phenomena

#### Theory of Diffraction Heuristic Approaches

Yury A. Kravtsov, Ning Yan Zhu

Audience: Postgraduate Students, Professionals & Researchers in Physics, Mathematics and Engineering (Electrical, Acoustical, Optical and

Geophysical Engineering)

2010 400 pp. 57Figs. 160 x 240 820g Hardback ISBN: 978-1-84265-372-2 £ 54.95 / US\$ 110.00



#### Thermodynamics and Statistical Mechanics

P. V. Panat

Audience: Undergraduate - Postgraduate Students &

Researchers

2008 436 pp. 90Figs. 185 x 240 Hardback ISBN: 978-1-84265-495-8 £ 44.95 / US\$ 89.95





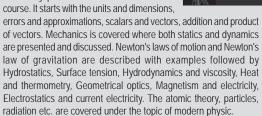
#### **University Physics**

Rama Bhat,

Jothilakshmi Rajendran,

Balasubramanian Esakki

UNIVERSITY PHYSICS covers the material commonly prescribed to students in a first course. It starts with the units and dimensions



**Audience:** Undergraduate Students, Researchers and Professionals

2014 526 pp. 340Figs. 17Tbls. 185 x 240 1038g Hb ISBN: 978-1-84265-813-0 £ 44.95 / US\$ 79.95



University Physics

#### Vector Spaces and Matrices in Physics

Second Edition

M. C. Jain

Audience: Graduate and Postgraduate Students of Physics

2007 232 pp. 160 x 240 600g Hardback ISBN: 978-1-84265-215-2 £ 29.95 / US\$ 59.95



### Very Low Frequency (VLF) Phenomena

Editors: A. R. W. Hughes, Csaba Ferencz, A. K. Gwal

Audience: Radio Scientists, Engineering, Geologists and Researchers

2003 376 pp. 151Figs. 185 x 240 900g Hardback ISBN: 978-81-7319-485-6 £ 85.00 / US\$ 170.00



## Wave Dynamics and Stability of Thin Film Flow Systems

Editors: R. Usha, Ashutosh Sharma, B. S. Dandapat

Audience: Students, Teachers & Researchers in Mathematics / Physics / Chemical and Mechanical Engineering

2006 524 pp. 160 x 240 1000g Hardback ISBN: 978-81-7319-788-8 £ 59.00 / US\$ 170.00



#### ALPHA SCIENCE SERIES ON WAVE PHENOMENA

Editor: Dr.-Ing. Helmut K.V. Lotsch

Editorial Advisor: PD Dr.-Ing. Ning Yan Zhu

# Advanced Theory of Diffraction by a Semi-infinite Impedance Cone

J. M. L. Bernard

NEW

Asymptotic Methods in Short-Wavelength Diffraction Theory is dedicated to modern approaches of a high-frequency technique in



diffraction theory. Among the considered topics are: the ray method, the parabolic equation approach, the method of "etalon" problems, an asymptotics of the Laplacian eigenfunctions and of the Green's function to the Helmholtz equation, the theory of high-frequency whispering-gallery waves. Recent results from the literature dealing with localized asymptotic solutions and uniform representation of a high-frequency wave-field are also reviewed. The monograph is addressed to the experts on electromagnetics, seismology and acoustics as well as to mathematicians interested in modern approaches of the mathematical physics.

Audience: Postgraduate Students, Professionals and Researchers

2014 170 pp. 160mm x 240mm 438g HB ISBN: 978-1-84265-776-8 £ 59.95 / US\$ 98.95

#### Asymptotic Methods in Short-Wavelength Diffraction Theory

V. M. Babich, V. S. Buldyrev

Asymptotic Methods in Short-Wavelength Diffraction Theory is dedicated to modern approaches of a high-frequency technique in diffraction theory. Among the considered topics are: the ray method, the parabolic equation approach, the method of "etalon" problems, an asymptotics of the Laplacian eigenfunctions and of the Green's function to the Helmholtz equation, the theory of high-frequency whispering-gallery waves. Recent results from the literature dealing with localized asymptotic solutions and uniform representation of a high-frequency wave-field are also reviewed. The monograph is addressed to the experts on electromagnetics, seismology and acoustics as well as to mathematicians interested in modern approaches of the mathematical physics.

Audience: Postgraduate Students, Professionals & Researchers in electromagnetics, seismology, acoustics and mathematical physics

2009 495 pp. 89 Figs. 160mm x 240mm 1000g HB ISBN: 978-1-84265-232-9 £ 75.00 / US\$ 150.00

### **Geometrical Optics in Engineering Physics** *Y. A. Kravtsov*

Audience: Doctoral & Postgraduate Students, Teachers

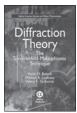
and Researchers

2005 375 pp. 160mm x 240mm 800g HB ISBN: 978-1-84265-159-9 £ 65.00 / US\$ 130.00

# Diffraction Theory The Sommerfeld-Malyuzhinet Technique

V. M. Babich, M. A. Lyalinov, V. E. Grikurov

**CONTENTS:** Foreword / Introduction and Historic Remarks / The Diffraction Problem in Angular



Domains / Solutions of the Helmholtz Equation by the Sommerfeld Integral / Sommerfeld Integral in the Problem of the Plane-Wave Diffraction by a Perfect Wedge / Sommerfeld-Diffraction Problem on a Riemann Surface and the Uniform Far-Field Asymptotics / Diffraction by a Wedge with Impedance-Boundary Conditions (the Malyuzhinets Problem) / General Theory of the Malyuzhinets-Type Equations with One Unknown Function / Green Function for an Angular Domain (Cylindrical-Wave Diffraction) / Diffraction of a Plane Wave by a Wedge with Thin Dielectric Coatings / Wave Diffraction in the Wedge's Exterior Bisected by a Thin Semi-Transparent Layer / Diffraction of a Skew-Incident Plane Electromagnetic Wave by an Impedance Wedge / Concluding Remarks / Appendices – On the Saddle-Point Technique / The Stationary-Phase Method / The Fresnel Integral / The Kirchhoff and Physical-Optics Approximations / Computation of the Malyuzhinets Function / References / Index.

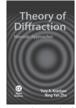
Audience: Postgraduate Students, Professionals and Researchers in Wave / Electrical & Electronics Engineering, Physics & Applied Mathematics

2008 228 pp. 160mm x 240mm 590g HB ISBN: 978-1-84265-310-4 £ 59.95 / US\$ 120.00

#### Theory of Diffraction Heuristic Approaches

Yury A. Kravtsov, Ning Yan Zhu

Theory of Diffraction: Heuristic Approaches outlines the asymptotic methods in the theory of diffraction, which manifest their strong heuristic nature, including the geometrical theory of diffraction by J.B. Keller, the physical



theory of diffraction by P.Ya. Ufimtsev, the parabolic wave-equation method by Leontovich and Fock, which forms the basis for quasi-optics, the complex geometrical optics as well as the Maslov's, Kravtsov-Ludwig's and Orlov's asymptotic methods for a caustic-wave-fields description. The book is addressed to engineers, applied physicists and students, who need a compact, without complicated mathematics, comprehensive outline of the most effective methods of diffraction theory, capable of describing the lion's share of applied problems.

Audience: Postgraduate Students, Professionals and Researchers in Physics & Engineering

2010 400 pp. 57 Figs. 160mm x 240mm 820g HB ISBN: 978-1-84265-372-2 £ 54.95 / US\$ 110.00

www.alphasci.com