Strings and Fundamental Physics

The basic idea, simple and revolutionary at the same time, to replace the concept of a point particle with a one-dimensional string, had opened up a whole new field of research and, four decades later, its many-faceted consequences are still not fully conceivable today. Up to now string theory has offered a new way to view all particles as different excitations of the same fundamental object, it has celebrated success by discovering the graviton in its spectrum, and it has naturally led to consider space-times with more than four dimensions has triggered numerous interesting developments in fields as different as condensed matter physics and pure mathematics. This book collects pedagogical lectures by leading experts in string theory, introducing the nonspecialist reader to some of the newest developments in the field.

Features

- Self-contained and concise introduction into string theory and related topics
- Edited and authored by leading specialists in the field
- Suitable for both graduate courses and self-study

Contents


Fields of interests

Quantum Field Theories, String Theory; Mathematical Physics; Mathematical Applications in the Physical Sciences

Target groups

Graduate

Product category

Monograph

Due January 2012

2012. XII, 291 p. 24 illus. (Lecture Notes in Physics, Volume 851) Softcover
- $89.95
ISBN 978-3-642-25946-3

Scanning Probe Microscopy in Nanoscience and Nanotechnology 3

This book presents the physical and technical foundation of the state of the art in applied scanning probe techniques. It constitutes a timely and comprehensive overview of SPM applications. The chapters in this volume relate to scanning probe microscopy techniques, characterization of various materials and structures and typical industrial applications, including topographic and dynamical surface studies of thin-film semiconductors, polymers, paper, ceramics, and magnetic and biological materials.

Features

- Summarizes the current state of the art in scanning probe microscopy techniques
- Contains strong part on biological applications
- Contributions by leading researchers and application scientists from all over the world and from various industries provide a broader perspective

Contents


Fields of interests

Nanoscale Science and Technology; Nanotechnology; Nanotechnology and Microengineering

Target groups

Research

Product category

Monograph

Due February 2012

2012. 650 p. 450 illus., 150 in color. (NanoScience and Technology) Hardcover
- $199.00
ISBN 978-3-642-25413-0

We are the Martians!

Connecting Cosmology with Biology

From the Overture: (...) I’ll cover the origin of the universe, of the stars and the galaxies, of the elements of which we are made and all the rest. I’ll also cover the birth of the planets and the molecules that float in space, by themselves or carried by interplanetary and interstellar rocks and ice balls. Then I will talk about the new astronomy of the third millennium, that “contact astronomy” which started with meteorite collecting and today allows us to visit planets, comets, and asteroids to have a taste of them in situ.

Features

- Paints a compelling picture that shows how life derives from the Big Bang through the formation of matter and energy
- Explains how 40 000 tons of extraterrestrial matter raining down on Earth each year continues to bring the bricks of life from the Universe
- Well written with a touch of wit by Giovanni Bignami, an active and world-famous astrophysicist, President of COSPAR, the world Committee on Space Research
- Introduces the new and powerful concept of “contact astronomy”

Contents

Preface.- Overture: Man vs. The Universe : the Match.- 1 Let’s build the Universe - light and matter.- 2 Let’s build the rest of the Universe.- 3 Astronomy in search of alien.- 4 Contact astronomy: the Universe invading us.- 5 Contact astronomy: we, the invaders.- 6 Contact astronomy: comets and their dust.- 7 Building from bricks: what is life?- 8 Anyone out there?- Coda: What remains to be discovered?

Fields of interests

Astrobiology; Popular Science in Astronomy; Extraterrestrial Physics, Space Sciences

Target groups

Popular/general

Product category

Popular science

Due March 2012

Translation from Italian ISBN 978-88-26156-4

2012. 200 p. 22 illus. Softcover
- approx. $39.95
Space Weather
Physics and Effects

This book is a state-of-the-art review on the physics of space weather and on space weather impacts on human technology, including manned spaceflight. With contributions from a team of international experts, this comprehensive work covers all aspects of space weather physical processes, and all known aspects of space hazards from humans, both in space and on Earth. Space Weather - Physics and Effects provides the first comprehensive, scientific background of space storms caused by the sun and its impact on geospace focuses on weather issues that have become vital for the development of nationwide technological infrastructures explains magnetic storms on Earth, including the effects of EUV radiation on the atmosphere is an invaluable aid in establishing real-time weather forecasts details the threat that solar effects might have on modern telecommunications systems, including national power grid systems, aircraft and manned spaceflight.

Fields of interests
Extraterrestrial Physics, Space Sciences; Geophysics/Geodesy; Meteorology/Climatology

Target groups
Research

Product category
Monograph

Solved Problems in Quantum and Statistical Mechanics

This work arises from our teaching this subject during many years. The vast majority of these exercises are the exams we gave to our students in this period. We carefully selected the subjects of the exercises to cover all the material which is most needed and which is treated in the most well known texts on these subjects. Each exercise is carefully solved in full details, explaining the theory behind the solution with particular care for those issues that, from our experience, are found most difficult from the average student. Indeed, several exercises are designed to throw light on aspects of the theory that, for one reason or another, are usually neglected with the result to make the students feel uneasy about them. In fact most students get acquainted just with the more common manipulations, which are illustrated by many examples in textbooks. Our exercises never require extensive calculations but tend to be somewhat unusual and force the solver to think about the problem starting from the principles, rather than by analogy with some previously solved exercise.

Features
- Carefully written solutions, provide best way to master the subject faster
- Theory issues are explained before providing the solution to the exercise
- Great number of exercises on different subject cover effectively the subject

Contents
Introduction to Quantum Mechanics.- Problems on Quantum Mechanics.- Problems on Statistical Mechanics.

Fields of interests
Quantum Physics; Thermodynamics; Statistical Physics, Dynamical Systems and Complexity

Target groups
Lower undergraduate

Product category
Undergraduate textbook

Eta Carinae and the Supernova Impostors

In 1965 Fritz Zwicky proposed a class of supernovae that he called „Type V“, described as „excessively faint at maximum“. There were only two members, SN1961v and Eta Carinae. We now know that Eta Carinae was not a true supernova, but if it were observed today in a distant galaxy we would call it a „supernova impostor“.

Features
- Provides a complete and up-to-date coverage of this famous and peculiar star: its ejecta, history, and physical state
- Presents the connections with the instabilities and final stages in the most massive stars, including the progenitors of supernovae and the „first“ stars
- Written by a team of prominent astronomers

Contents

Fields of interest
Astronomy, Astrophysics and Cosmology

Target groups
Research

Product category
Monograph
D. Dragoman, M. Dragoman, Bucharest, Romania

**Bionanoelectronics**

**Bioinquiring and Bioinspired Devices**

This book presents the achievements in bionanoelectronics in a coherent manner. It deals with nanodevices applied to biomaterials, molecular motors, molecular pumps, molecular actuators, and electronic biodevices, including nanodevices for sensing and imaging biomolecules. The book describes bionanoelectronics, detection of biomolecules and targets various biological applications such as detection and sequencing of DNA and early detection of various diseases and nanomedicine. Further important topics of the book are biomimetics and bioinspired electronics. The book also deals with biomolecules as building blocks of nanodevices for nanoelectronics or future computing architectures. The application of scanning probe techniques to biological samples described.

**Features**
- State-of-the-art report of bionanoelectronics
- Presents nanodevices applied to biomaterials
- New ways in nanomedicine and biomimetics
- Application of scanning probe techniques to biological samples explained

**Contents**


**Fields of interest**

Nanoscale Science and Technology; Nanotechnology and Microengineering; Nanotechnology

**Target groups**

Graduate

**Product category**

Monograph

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V. Eyert, University of Augsburg, Germany

**The Augmented Spherical Wave Method**

**A Comprehensive Treatment**

The Augmented Spherical Wave (ASW) method is one of the most powerful approaches to handle the requirements of finite basis sets in DFT calculations. It is particularly suited for the calculation of the electronic, magnetic, and optical properties of solid-state materials. Recent developments allow application, in addition, to the elastic properties and phonon spectra. Due to the localized nature of the ASW basis set these properties can be easily interpreted in terms of atomic-like orbitals. The book addresses all those who want to learn about methods for electronic structure calculations and the ASW method in particular. This new edition has been thoroughly revised and extended. In particular, a chapter on the new, both very efficient and accurate spherical-wave-based full potential ASW method has been added.

**Features**
- Comprehensive and self-contained exposition of the method
- Written by a leading specialist on the subject matter
- Contains all relevant technical background in five appendices

**Contents**


**Fields of interest**

Condensed Matter Physics; Numerical and Computational Physics; Theoretical and Computational Chemistry

**Target groups**

Research

**Product category**

Monograph

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R. Glaser, Humboldt-Universität, Berlin, Germany

**Biophysics**

**An Introduction**

Biophysics is the science of physical principles underlying all processes of life, including the dynamics and kinetics of biological systems. This fully revised 2nd English edition is an introductory text that spans all steps of biological organization, from the molecular, to the organism level, as well as influences of environmental factors. In response to the enormous progress recently made, especially in theoretical and molecular biophysics, the author has updated the text, integrating new results and developments concerning protein folding and dynamics, molecular aspects of membrane assembly and transport, noise-enhanced processes, and photo-biophysics. The advances made in theoretical biology in the last decade call for a fully new conception of the corresponding sections. Thus, the book provides the background needed for fundamental training in biophysics and, in addition, offers a great deal of advanced biophysical knowledge.

**Features**
- New edition extensively revised and updated
- Integrates classical approaches and new concepts
- With numerous color figures
- Ideally suited for biology and biochemistry students seeking a well-founded biophysical basis

**Contents**


**Fields of interest**

Biophysics and Biological Physics; Biochemistry, general; Human Physiology

**Target groups**

Graduate

**Product category**

Graduate/Advanced undergraduate textbook

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**Due February 2012**

2012. 350 p. 280 illus. (NanoScience and Technology) Hardcover
- $169.00
ISBN 978-3-642-25571-7

**Due January 2012**

2nd ed. 2012. XII, 401 p. 21 illus. (Lecture Notes in Physics, Volume 849) Softcover
- $89.95
ISBN 978-3-642-25863-3

**Due March 2012**

- $99.00
ISBN 978-3-642-25211-2
M. Griffiths, University of Glamorgan, UK

**Planetary Nebulae and How to Observe Them**

Planetary Nebulae and How to Observe Them is for amateur astronomers who want to go beyond the Messier objects, concentrating on one of the most beautiful classes of astronomical objects in the sky. Planetary nebulae are not visible to the naked eye, but they are a fascinating group of telescope objects. This guide enables a user equipped with an average-sized amateur telescope to get the best out of observing them. Topics covered include their astrophysical make-up, history of their discovery, classification and description, telescopes to use, filters, and observing techniques - in short everything anyone would need to know to successfully observe planetary nebulae.

**Features**
- Enables a user equipped with an average-sized amateur telescope to get the best out of observing beautiful objects in the night sky
- Details the astrophysical make-up, history, discovery, and classification of planetary nebulae
- Includes an observational guide of over 100 nebulae personally observed by the author with telescopes of various sizes

**Contents**
- Preface
- Chapter 1: A Short History of Planetary Nebulae
- Chapter 2: Evolution of Planetary Nebulae
- Chapter 3: Observing Planetary Nebulae
- Chapter 4: Photographing Planetary Nebulae
- Chapter 5: Catalogs and Finder Charts
- Chapter 6: Observing Descriptions by Constellation
- Chapter 7: A Planetary Nebulae Marathon
- References and For Further Reading

**Fields of interests**
- Astronomy, Observations and Techniques
- Popular Science in Astronomy
- Optics, Optoelectronics
- Plasmonics and Optical Devices

**Target groups**
- Popular/general

**Product category**
- Popular science

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C. Groß, Max-Planck-Institute of Quantum Optics, Garching, Germany

**Spin Squeezing and Non-linear Atom Interferometry with Bose-Einstein Condensates**

Interferometry, the most precise measurement technique known today, exploits the wave-like nature of the atoms or photons in the interferometer. As expected from the laws of quantum mechanics, the granular, particle-like features of the individually independent atoms or photons are responsible for the precision limit, the shot noise limit. However this "classical" bound is not fundamental and it is the aim of quantum metrology to overcome it by employing entanglement among the particles. This work reports on the realization of spin-squeezed states suitable for atom interferometry. Spin squeezing was generated on the basis of spin-squeezed states suitable for atom interferometry. Spin squeezing was generated on the basis of spin-squeezed states suitable for atom interferometry. Spin squeezing was generated on the basis of spin-squeezed states suitable for atom interferometry. Spin squeezing was generated on the basis of spin-squeezed states suitable for atom interferometry.

**Features**
- Recipient of the German Physical Society's 2011 Dissertation Prize
- Important contribution to pushing back the precision limit in interferometry
- Provides excellent theoretical overview in addition to the experimental advances

**Contents**
- Introduction
- Spin Squeezing, Entanglement and Quantum Metrology
- Squeezing Two Mean Field Modes of a Bose-Einstein Condensate
- Non-linear Interferometry Beyond the Standard Quantum Limit
- Outlook

**Fields of interests**
- Quantum Gases and Condensates
- Measurement Science and Instrumentation

**Target groups**
- Research

**Product category**
- Monograph

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K. M. Harrison, Cobham, UK

**Grating Spectroscopes and How to Use Them**

Grating Spectroscopes and How to Use Them is written for amateur astronomers who are just getting into this field of astronomy.

**Features**
- The perfect starting point for first-time spectrocope users, with no heavy mathematics and with information on how to buy and use an entry-level spectrocope, which costs $150 vs. the $1,500+ of more advanced types
- Describes how to buy and use an entry-level spectrocope
- Includes specific details on the transmission filters for cameras and telescopes
- Packed with practical tips on how to use simple commercial grating spectroscopes
- Presents clear worked-through examples of how to analyze spectra from the stars and planets

**Contents**
- Preface
- Quick Start Guide
- Chapter 1: Some Background and Basics
- Chapter 2: Imaging a Spectrum with the Grating
- Chapter 3: My First Spectrum
- Chapter 4: Processing Spectra
- Chapter 5: Improving Your Grating Spectroscope
- Chapter 6: Some Technical Details
- Chapter 7: Spectral Analysis
- Appendix A: The Greek Alphabet
- Appendix B: The Brightest Stars
- Appendix C: The Brightest Wolf-Rayet Stars
- Appendix D: The Brightest Be Stars
- Appendix E: Spectroscopy Forums
- Appendix F: Suppliers of Spectroscope Gratings and Accessories
- Appendix G: Spectroscopy Forums

**Fields of interests**
- Astronomy, Observations and Techniques
- Popular Science in Astronomy
- Spectroscopy and Microscopy

**Target groups**
- Popular/general

**Product category**
- Popular science

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Due February 2012

2012. XVI, 213 p. 167 illus., 165 in color.
(Astronomers’ Observing Guides) Softcover
- $34.95


Due January 2012

2012. XI, 113 p. 59 illus.
(Springer Theses) Hardcover
- $129.00

ISBN 978-3-642-25636-3

Due March 2012

2012. XIV, 206 p. 122 illus., 64 in color.
(Patrick Moore’s Practical Astronomy Series) Softcover
- approx. $34.95

ISBN 978-1-4614-1396-7
A. Heck, Observatoire Astronomique, Strasbourg, France (Ed)

Organizations, People and Strategies in Astronomy

Contents

Fields of interests
Astronomy, Observations and Techniques; Administration, Organization and Leadership

Target groups
Research

Product category
Monograph

Due March 2012
2012. VI, 312 p. 70 illus., 52 in color. (Astrophysics and Space Science Library, Volume 100) Hardcover
► $169.00

S. Ji, Rutgers University, Piscataway, NJ, USA

Molecular Theory of the Living Cell

Concepts, Molecular Mechanisms, and Biomedical Applications

Features
► First book on the molecular theory of the living cell, utilizing the principles, laws and concepts derived from physics, chemistry, computer science, linguistics, semiotics and philosophy
► The book contains a most complete catalogue of the fundamental molecular mechanisms responsible for molecular processes supporting life
► The book applies the molecular principles of the living cell to solving not only basic problems encountered in contemporary molecular biology such as the definition of a gene, but also practical problems

Contents

Fields of interests
Biophysics and Biological Physics; Bioorganic Chemistry; Philosophy of Biology

Target groups
Research

Product category
Monograph

Due February 2012
2012. XX, 800 p. 211 illus., 115 in color. Hardcover
► $219.00
ISBN 978-1-4614-2151-1

H. Jin, Dongchaoyang District, Changchun, P. R. China; K. Hisatke, Chungnam National University, Korea; T. Miyazaki, Tohoku University, Sendai, Japan (Eds)

The Physics of Ferromagnetism

This book covers both basic physics of ferromagnetism, such as magnetic moment, exchange coupling, magnetic anisotropy, and recent progress in advanced ferromagnetic materials. Special focus is placed on NdFeB permanent magnets and the materials studied in the field of spintronics (explaining the development of tunnel magnetoresistance effect through the so-called giant magnetoresistance effect).

Features
► Summarizes new developments in the research of ferro-magnetism
► Covers the effect and devices of giant magnetoresistance
► Strong focus on spintronics
► Presents new materials for permanent magnets
► Useful reference to researchers and graduate students alike

Contents

Fields of interests
Magnetism, Magnetic Materials; Metallic Materials; Structural Materials

Target groups
Research

Product category
Monograph

Due February 2012
► $169.00
ISBN 978-3-642-25582-3

H. Jin, Dongchaoyang District, Changchun, P. R. China; K. Hisatke, Chungnam National University, Korea; T. Miyazaki, Tohoku University, Sendai, Japan (Eds)

The Physics of Ferromagnetism

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Features
► Summarizes new developments in the research of ferro-magnetism
► Covers the effect and devices of giant magnetoresistance
► Strong focus on spintronics
► Presents new materials for permanent magnets
► Useful reference to researchers and graduate students alike

Contents

Fields of interests
Magnetism, Magnetic Materials; Metallic Materials; Structural Materials

Target groups
Research

Product category
Monograph
H. Miao, Theoretical Astrophysics, Pasadena, CA, USA

Exploring Macroscopic Quantum Mechanics in Optomechanical Devices

Recent state-of-the-art technologies in fabricating low-loss optical and mechanical components have significantly motivated the study of quantum-limited measurements with optomechanical devices. Such research is the main subject of this thesis. In the first part, the author considers various approaches for surpassing the standard quantum limit for force measurements.

Features
► An outstanding PhD thesis showing that advanced gravitational wave detectors are ideal instruments to explore the quantum mechanical nature of their macroscopic test masses ► The author was awarded the 2010 GWIC (Gravitational Wave International Committee) Thesis prize

Contents

Fields of interests
Astrophysics and Astroparticles; Laser Technology, Photonics; Measurement Science and Instrumentation

Target groups
Research

Product category
Monograph

Due February 2012

Hardcover
2012. XIII, 583 p. 249 illus., 117 in color. (NATO Science for Peace and Security Series A: Chemistry and Biology)
► $229.00
ISBN 978-94-007-2851-6

Softcover
2012. XIII, 583 p. 249 illus., 117 in color. (NATO Science for Peace and Security Series A: Chemistry and Biology)
► approx. $119.00
ISBN 978-94-007-2909-4

Due January 2012

2012. XX, 195 p. 79 illus. (Springer Theses) Hardcover
► $129.00
ISBN 978-3-642-25639-4

Y. Narita, Technische Universität Braunschweig, Germany

Plasma Turbulence in the Solar System

Dynamics of astrophysical systems is often described by plasma physics, yet understanding the nature of plasma turbulence remains as a challenge in physics in both theories and experiments. This book is an up-to-date summary and review of recent results in research on waves and turbulence in near-Earth space plasma turbulence, obtained by Cluster, the multi-spacecraft mission. Spatial and temporal structures of solar wind turbulence as well as its interaction with the bow shock ahead of the Earth are presented using Cluster data. The book presents (1) historical developments, (2) theoretical background of plasma physics, turbulence theories, and the plasma physical picture of the solar system, (3) analysis methods for multi-spacecraft data, (4) results of Cluster data analysis, and (5) impacts on astrophysics and Earth sciences.

Features
► Reviews the state-of-the-art research on space plasma turbulence ► Discusses impacts on related subjects such as astrophysics and Earth science ► With an overview of plasma physics, turbulence physics, and solar system science ► Serves as a guide to analysis methods for multi-point or multi-spacecraft measurements

Contents
1 Introduction. - 2 Theoretical background. - 3 Multi-spacecraft measurements. - 4 Turbulence properties in space plasma. - 5 Impacts on related subjects. - Index.

Fields of interests
Extraterrestrial Physics, Space Sciences; Plasma Physics; Astronomy, Astrophysics and Cosmology

Target groups
Graduate

Product category
Brief

Due January 2012

2012. VIII, 102 p. 33 illus. (SpringerBriefs in Physics) Softcover
► $49.95
ISBN 978-3-642-25666-3
A Trajectory Description of Quantum Processes. I. Fundamentals

A Bohmian Perspective

Trajectory-based formalisms are an intuitively appealing way of describing quantum processes because they allow the use of „classical” concepts. Beginning at an introductory level suitable for students, this two-volume monograph presents (1) the fundamentals and (2) the applications of the trajectory description of basic quantum processes. This first volume is focussed on the classical and quantum background necessary to understand the fundamentals of Bohmian mechanics, which can be considered the main topic of this work. Extensions of the formalism to the fields of open quantum systems and to optics are also proposed and discussed.

Features
► Offers a thorough introduction to, and treatment of, trajectory-based quantum-mechanical calculations ► Presents the fundamentals of Bohmian mechanics ► Useful for a wide range of scattering problems, as described in Vol. 2

Contents

Fields of interests
Quantum Physics; Theoretical, Mathematical and Computational Physics

Target groups
Research

Product category
Monograph

Due January 2012
2012. XVI, 308 p. 15 illus., 7 in color. (Lecture Notes in Physics, Volume 850) Softcover
► $89.95
ISBN 978-3-642-18091-0

Interplanetary Outpost

The Human and Technological Challenges of Exploring the Outer Planets

„Interplanetary Outpost” follows the mission architecture template of NASA’s plan for Human Outer Planet Exploration (HOPE), which envisions sending a crew to the moon Callisto to conduct exploration and sample return activities.

Features
► Provides an overview of the technical and human factors that must be considered in order to embark upon a manned mission to the outer planets ► Offers a unique insight into and an understanding of how humans will survive and adapt during trips to the outer planets ► Author has trained as an astronaut and written extensively on setting up habitable environments in space and thus knows the issues involved quite well ► Continues the successful outpost book series of science writer Erik Seedhouse

Contents

Fields of interests
Extraterrestrial Physics, Space Sciences; Popular Science in Astronomy; Aerospace Technology and Astronautics

Target groups
Popular/general

Product category
Popular science

Due December 2011
2012. XXVIII, 253 p. 84 illus., 75 in color. (Springer Praxis Books / Space Exploration) Softcover
► $39.95
ISBN 978-1-4419-9747-0

Atomic Processes in Basic and Applied Physics

Contents
Laboratory and astrophysical plasmas. Modern view on ball lightning: Observations, experiments, theories.- Unravelling the mysteries of matter surrounding supermassive black holes.- Spectroscopic diagnostics of hot coronal plasma.- Hot spots and giant spiders clouding the solar sky.- Populations of excited parabolic states of hydrogen beam in fusion plasmas.- Atomic processes in dusty plasmas.- Atomic and Molecular Data Need for Industrial Application Plasmas.- Atomic collisions. Charge transfer dynamics in low to intermediate energy ion-atom/molecule collisions studied by momentum imaging techniques.- Single and Multiple Electron Loss by Heavy Ions.- Target-density effects in atomic collisions.- Excitation and ionization in atom-atom collisions.- Atomic collisions in liquid targets.- Excited states of atomic hydrogen in reflected neutrals at high-Z metal surfaces.- The long-range interaction effects in collisions of Rydberg atoms with neutral targets.- Useful formula and Internet resources for ionic collisions.- Applications. Atomic Processes and Data Requirements in Tumor Therapy.- Atomic X-Ray Physics at the Experimental Storage Ring ESR. Atomic physics using highly intense X-ray pulses.- Cascade of atomic displacements with account for ion-ion cross sections in solid state.- Approach to ultra-low ion beam temperatures by beam cooling.- Nonlinear and multipole effects on optical lattice clock.- Photorecombination of highly charged heavy ions.

Fields of interests
Atomic, Molecular, Optical and Plasma Physics; Measurement Science and Instrumentation

Target groups
Graduate

Product category
Monograph

Due February 2012
2012. 400 p. 100 illus., 10 in color. (Springer Series on Atomic, Optical, and Plasma Physics, Volume 68) Hardcover
► $169.00
ISBN 978-3-642-25568-7

74
Electromagnetic Vibration Energy Harvesting Devices
Architectures, Design, Modeling and Optimization

Electromagnetic vibration transducers are seen as an effective way of harvesting ambient energy for the supply of sensor monitoring systems. Different electromagnetic coupling architectures have been employed but no comprehensive comparison with respect to their output performance has been carried out up to now.

Features
- Comprehensive comparative study with detailed optimization calculations
- Provides a guideline to the designer of electromagnetic vibration transducers from the application point of view
- First book which focuses on the advantages of Vibration Energy Harvesting

Contents

Fields of interests
Electronic Circuits and Devices; Energy Harvesting; Circuits and Systems

Target groups
Research

Product category
Monograph

Due February 2012
2012. XXX, 257 p. 130 illus., 27 in color. (Springer Series in Advanced Microelectronics, Volume 35) Hardcover
$129.00
ISBN 978-94-007-2943-8

Due December 2011
2012. XV, 982 p. (Biomathematical and Biomechanical Modeling of the Circulatory and Ventilatory Systems, Volume 3) Hardcover
$219.00

Signaling at the Cell Surface in the Circulatory and Ventilatory Systems

The volumes in this authoritative series present a multidisciplinary approach to modeling and simulation of flows in the cardiovascular and ventilatory systems, especially multiscale modeling and coupled simulations. The cardiovascular and respiratory systems are tightly coupled, as their primary function is to supply oxygen to and remove carbon dioxide from the body's cells. Because physiological conduits have deformable and reactive walls, macroscopic flow behavior and prediction must be coupled to nano- and microscopic events in a corrector scheme of regulated mechanisms when the vessel lumen caliber varies markedly.

Features
- Reviews signaling pathways in the regulation of circulatory and respiratory function
- Describes ion and molecular carriers and receptors
- Integrates biology, chemistry, and physics for a multidisciplinary understanding of physiological flows

Contents

Fields of interests
Biophysics and Biological Physics; Biomedical Engineering; Mathematical and Computational Biology

Target groups
Research

Product category
Monograph