



## Forthcoming

### PRINCIPLES OF RADIATION INTERACTION IN MATTER AND DETECTION

3rd Edition

by **Claude Leroy** (*Université de Montréal*) & **Pier-Giorgio Rancoita** (*Istituto Nazionale di Fisica Nucleare, Milan*)

The third edition includes additional material covering, for instance: mechanisms of energy loss like the inverse Compton scattering, corrections due to the Landau–Pomeranchuk–Migdal effect, an extended relativistic treatment of nucleus–nucleus screened Coulomb scattering, and transport of charged particles inside the heliosphere.

**Contents:** Electromagnetic Interaction of Radiation in Matter; Nuclear Interactions in Matter; Radiation Environments and Damage in Silicon Semiconductors; Scintillating Media and Scintillator Detectors; Solid State Detectors; Displacement Damage and Particle Interactions in Silicon Devices; Gas Filled Chambers; Principles of Particle Energy Determination; Superheated Droplet (Bubble) Detectors and CDM Search; Medical Physics Applications.

**Readership:** Researchers, academics, graduate students and professionals in accelerator, particle, applied and medical physics.

1038pp  
978-981-4360-51-7

Nov 2011  
US\$232      £153

## New

### A MODERN INTRODUCTION TO PARTICLE PHYSICS

Third Edition

by **Fayyazuddin & Riazuddin** (*National Centre for Physics, Pakistan*)

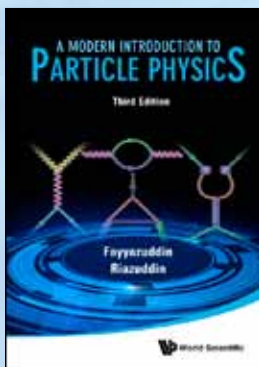
*“It is well written and up to date ... I can recommend this book to those aiming for a broad working knowledge of the essentials of particle theory. It is a book to which I shall continue to refer for a long time.”*

Contemporary Physics

**Contents:** Introduction; Scattering and Particle Interactions; Space-Time Symmetries; Internal Symmetries; Unitary Groups and SU(3); SU(6) and Quark Model; Colors, Gauge Principle and Quantum Chromodynamics; Heavy Flavor Physics; Heavy Quark Effective Theory; Neutrinos; Weak Interactions; Properties of Weak Hadronic Currents and Chiral Symmetry; and other topics.

750pp  
978-981-4338-83-7

Aug 2011  
US\$90      £56



### PHENOMENOLOGY OF ULTRA-RELATIVISTIC HEAVY-ION COLLISIONS

by **Wojciech Florkowski** (*Jan Kochanowski University & Institute of Nuclear Physics, Polish Academy of Sciences*)

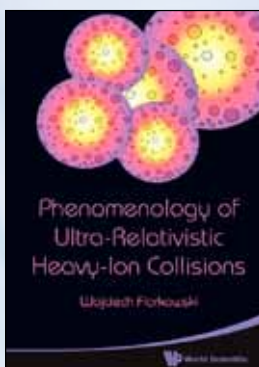
*“It gives an excellent introduction to and an in-depth review of the standard theoretical framework that is used to interpret the heavy-ion data. It provides a clear, logical and unified description of statistical, hydrodynamical and kinetic models ... there are various exercises in each chapter for use as a textbook in a graduate course. All in all, this book is highly recommendable both for heavy-ion and non-heavy-ion physicists.”*

CERN Courier

**Readership:** Academic and researchers working in the field of relativistic heavy-ion collisions and/or high energy physics; graduate and postgraduate students specialized in high-energy physics.

436pp  
978-981-4280-66-2

Mar 2010  
US\$108      £72



### World Scientific Lecture Notes in Physics FOUNDATIONS OF QUANTUM CHROMODYNAMICS

Vol. 78

An Introduction to Perturbative Methods in Gauge Theories (Third Edition)

by **T Muta** (*Fukuyama University*)

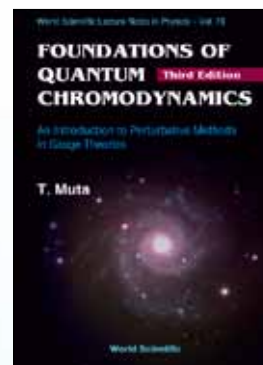
**Contents:** *Introduction:* General Survey; Quarks and Color; Need for Asymptotic Freedom; Notation and Conventions; *Elements of Quantum Chromodynamics:* Gauge Principle; Quantization; Feynman Rules; Regularization; Renormalization; *Renormalization Group Method:* Renormalization Group; Renormalization Group Equations; Solution of the Renormalization Group Equations; Asymptotic Freedom; Anomalous Dimensions; *Operator*

*Product Expansion:* Operator Products; Operator-Product Expansion in Perturbation Theory; Coefficient Functions; and other topics.

**Readership:** Researchers and graduate students in high energy physics, nuclear physics and mathematical physics.

432pp  
978-981-279-353-9

Sep 2009  
US\$110      £72  
978-981-279-354-6 (pbk)      US\$70      £46



### BETA BEAMS

Neutrino Beams

With a Foreword by **Piero Zucchelli** and a Contribution on Low Energy Beta Beams by **Cristina Volpe**

by **Mats Lindroos** (*CERN*) &

**Mauro Mezzetto**

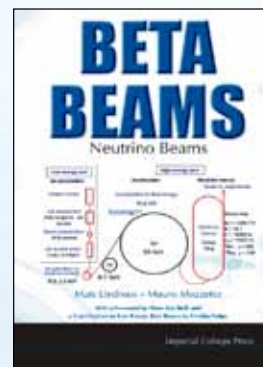
(*INFN, Sezione di Padova*)

**Contents:** Foreword by Piero Zucchelli; Machine Aspects; CERN-Fréc's Potential of Other Beta Beam Settings; Physics Potential of Other Beta Beam Settings; Low-Energy Beta-Beams by Cristina Volpe.

**Readership:** Academics, researchers, and research policy makers in the field of high energy physics and particle physics.

168pp  
978-1-84816-377-5

Jul 2009  
US\$99      £66



## Forthcoming

Particle Collisions and Quantitative Spectroscopy in Interdisciplinary Research

### FAST COLLISIONS OF LIGHT IONS WITH MATTER

Charge Exchange and Ionization

by **Dževad Belkić**

(*Nobel Medical University, Karolinska Institute, Sweden*)

**Contents:** Introduction; Formal Theory of Scattering; Short-Range Interactions; Long-Range Interactions and Coulomb Scattering; Correct Boundary Conditions; Distorted Wave Theory for Three-Body Rearrangement Collisions; Charge Exchange; Ionization; Electron Capture Into Continuum; Link of Charge Exchange and Ionization Through Capture to Continuum; and other topics.

**Readership:** Graduate students and researchers working on several branches of science and technology: radiation physics, accelerator-based physics, new sources of energy, high-temperature fusion of light ions, and cancer therapy.

375pp  
978-981-4366-04-5

Spring 2012  
US\$110      £73

Vol. 1

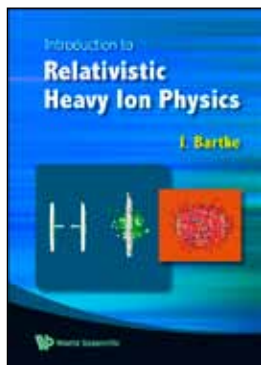


## Forthcoming

### INTRODUCTION TO RELATIVISTIC HEAVY ION PHYSICS

by **J Bartke** (*Institute of Nuclear Physics, Poland*)

**Contents:** Quantum Chromodynamics and the Phase Transition in Strongly Interacting Matter; Basic Properties of Atomic Nuclei; Sources of Relativistic and Ultrarelativistic Nuclei; Detection Techniques; Cross Sections and Collision Geometry; Fragmentation Processes; Multiplicities and Relative Abundances of Secondary Particles; Longitudinal Distributions of Secondary Particles; Transverse Spectra of Secondary Particles; Electromagnetic Effects on Charged Meson Spectra; Production of Strangeness and Heavy Flavours; and other topics.



**Readership:** Advanced undergraduate and graduate students, as well as research physicists involved in the physics of relativistic nuclei.

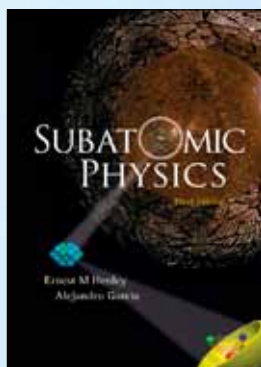
<b>240pp</b>	<b>Dec 2008</b>	
<b>978-981-02-1231-5</b>	<b>US\$82</b>	<b>£54</b>

### SUBATOMIC PHYSICS

**Third Edition**

by **Ernest M Henley & Alejandro Garcia** (*University of Washington*)

*“Henley and Garcia’s presentation and style hold the reader’s attention right from the start. The treatment is at just the right level to whet the reader’s appetite, slake their thirst for understanding and assess the current ‘state of the art’ ... this is a highly enlightening and up-to-date text, rather ambitious in its scope but successful in its aim to provide a comprehensive and comprehensible pedagogic overview of an exciting field of physics.”*



Contemporary Physics

**Readership:** Senior undergraduate students, beginning graduate students, and advanced engineering students.

<b>640pp</b>	<b>Jul 2007</b>	
<b>978-981-270-056-8</b>	<b>US\$121</b>	<b>£71</b>
<b>978-981-270-057-5(pbk)</b>	<b>US\$73</b>	<b>£41</b>
<b>Solutions Manual</b>		
<b>978-981-279-745-2(pbk)</b>	<b>US\$21</b>	<b>£10</b>

## Forthcoming

### LECTURES IN RELATIVISTIC QUANTUM MECHANICS

**An Introductory Course for Postgraduates in Particle Physics**

by **Farrukh Azfar** (*Oxford University*)

**Contents:** A Review of Special Relativistic Notation; Examples of 4-Vectors, Tensors, Lorentz-Scalars in the Physical World; The Dirac Equation; Solutions to the Dirac Equation and Boosting Solutions to Obtain Free Particle Solutions Comments on Negative Energy Solutions, Green’s Functions and Propagators (In General and for the Dirac Equation); Introduction of the Electro-magnetic Field into the Dirac Equation; Green’s Functions and Propagators (In General and for the Dirac Equation); and other topics.

**Readership:** Postgraduates and advanced undergraduates in particle physics.

<b>230pp</b>	<b>Fall 2012</b>	
<b>978-1-84816-735-3</b>	<b>US\$82</b>	<b>£51</b>
<b>978-1-84816-736-0(pbk)</b>	<b>US\$44</b>	<b>£27</b>

### World Scientific Lecture Notes in Physics LATTICE GAUGE THEORIES

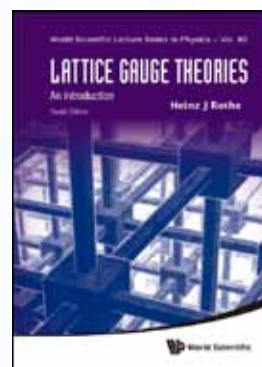
**An Introduction (Fourth Edition)**

by **Heinz J Rothe** (*Universität Heidelberg, Germany*)

*“This book is of invaluable interest for scientists working in this area (gauge theories on lattices) and it is addressed mainly at the graduate students interested in particle physics. It can be also of interest for physicists working in statistical mechanics, since the lattice formulation of field theories resembles closely that of complex mechanical systems.”*

Zentralblatt MATH

*“This book is clearly written and its content is explained so as to be understandable by anyone with a knowledge of the basics of quantum field theory. As an introductory text, it concentrates more on physical motivation and general principles, often avoiding more mathematically rigorous proofs where they might be confusing to the beginner ... it acts as a valuable starting point for anyone wishing to understand more about this subject.”*



Mathematical Reviews

<b>600pp</b>	<b>Spring 2012</b>	
<b>978-981-4365-85-7</b>	<b>US\$140</b>	<b>£92</b>
<b>978-981-4365-86-4(pbk)</b>	<b>US\$76</b>	<b>£50</b>

## Forthcoming

### THE NEUTRON

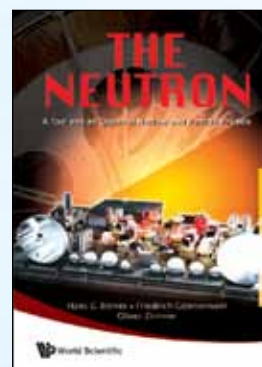
**A Tool and an Object in Nuclear and Particle Physics**

by **Hans G Börner** (*Institut Laue Langevin, France*) & **Friedrich Gönnerwein** (*University Tübingen, Germany*)

**Contents:** **Neutronics:** Low Energy Neutron Beams; Production of Slow Neutrons; Neutron Guides; **Particle Properties of the Neutron:** Mass of the Neutron; Studies of Neutron Properties with Cold Neutrons; Studies of Neutron Properties with Ultra Cold Neutrons; **The Neutron Capture Reaction:** Primary Gamma Rays; Secondary Gamma Rays; The Crystal Spectrometers GAMS at the ILL; Internal Conversion Electrons; Lifetime Measurements Using the GRID Technique; Empirical Manifestation of New Symmetries in Nuclei; and other topics.

**Readership:** Researchers, postgraduates and graduate students in the nuclear and particle physics.

<b>200pp</b>	<b>Winter 2011</b>	
<b>978-981-4273-08-4</b>	<b>US\$73</b>	<b>£51</b>



World Scientific Series in 20th Century Physics

### MURRAY GELL-MANN

**Selected Papers**

edited by **Harald Fritzsche** (*University of Munich*)

*“As an admirer of Murray Gell-Mann, I can only applaud the initiative of Harald Fritzsche to publish a selection of Gell-Mann’s papers. What interested me most in the collection were not the papers published in journals, but rather, the contributions to conferences, talks and so on.”*

CERN Courier

**Readership:** Researchers in high energy physics and theoretical physics.

<b>464pp</b>	<b>Feb 2010</b>	
<b>978-981-283-684-7</b>	<b>US\$105</b>	<b>£69</b>
<b>978-981-4261-62-3(pbk)</b>	<b>US\$48</b>	<b>£32</b>
<b>978-981-283-685-4(ebook)</b>	<b>US\$137</b>	



New

## Other Titles of Interest

## INTRODUCTION TO QUANTUM FIELD THEORY

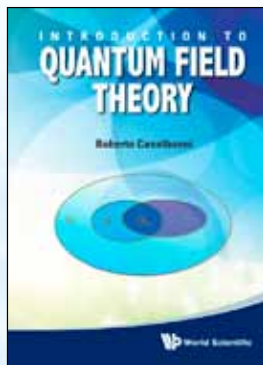
by **Roberto Casalbuoni** (University of Florence)

The book deals with quantum field theory which is the language of the modern physics of elementary particles. Written based on university lectures given by the author, the book provides treatments and technical details of quantum field theory, which will be particularly useful for students.

**Contents:** Lagrangian Formalism for Continuum Systems and Quantization; Klein-Gordon Field; Dirac Field; Electromagnetic Field; Symmetries in Field Theories; Time Ordered Products; Perturbation Theory; One-Loop Renormalization; and other topics.

**Readership:** Advanced undergraduate and graduate students in physics.

250pp	Aug 2011	
978-981-4329-34-7	US\$68	£42



## THE WORLD ACCORDING TO QUANTUM MECHANICS

Why the Laws of Physics Make Perfect Sense After All

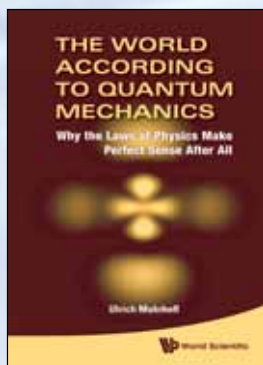
by **Ulrich Mohrhoff**

(Sri Aurobindo International Centre of Education, India)

**Contents: Overview:** Probability: Basic Concepts and Theorems; A (Very) Brief History of the "Old" Theory; Mathematical Interlude; A (Very) Brief History of the "New" Theory; The Feynman Route to Schrödinger (Stage 1); Special Relativity in a Nutshell; The Feynman Route to Schrödinger (Stage 2); **A Closer Look:** Why Quantum Mechanics?; The Classical Forces: Effects; The Classical Forces: Causes; Quantum Mechanics Resumed; Spin; Composite Systems; Quantum Statistics; Relativistic Particles; Solutions to Selected Problems.

**Readership:** Students (undergraduate and graduate), physics teachers (higher secondary) and general.

316pp	Mar 2011	
978-981-4293-37-2	US\$81	£56



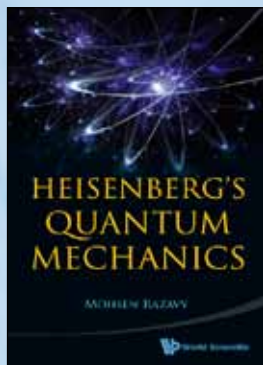
## HEISENBERG'S QUANTUM MECHANICS

by **Mohsen Razavy** (University of Alberta)

**Contents:** A Brief Survey of Analytical Dynamics; Discovery of Matrix Mechanics; Mathematical Preliminaries; Postulates of Quantum Theory; Equations of Motion, Hamiltonian Operator and the Commutation Relations; Symmetries and Conservation Laws; Bound State Energies for One-Dimensional Problems; Exactly Solvable Potentials, Supersymmetry and Shape Invariance; The Two-Body Problem; and other topics.

**Readership:** Advanced undergraduate and graduate students in physics, chemistry and applied mathematics; researchers in nuclear and particle physics.

680pp	Jan 2011	
978-981-4304-10-8	US\$120	£74
978-981-4304-11-5(pbk)	US\$61	£42



## ADVANCED QUANTUM MECHANICS

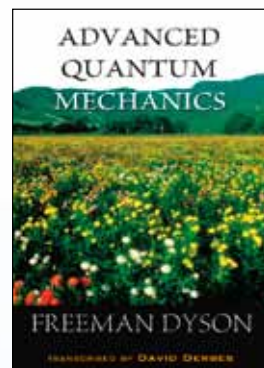
by **Freeman Dyson** & translated by **David Derbes** (Institute for Advanced Study Laboratory Schools, University of Chicago, Princeton)

"The fame of these lectures as well as of this author, together with the enduring interest in their contents attested by this transcription, obviously classify the book as of great interest to students and researchers willing to hear a presentation of quantum electrodynamics from one of the founding fathers."

Zentralblatt MATH

**Contents:** The Dirac Theory; Scattering Problems and Born Approximation; Field Theory; Examples of Quantized Field Theories; Free Particle Scattering Problems; General Theory of Free Particle Scattering; Scattering by a Static Potential. Comparison with Experimental Results.

236pp	Mar 2007	
978-981-270-622-5	US\$73	£40
978-981-270-661-4(pbk)	US\$33	£20



## MODERN ATOMIC AND NUCLEAR PHYSICS

(Revised Edition)

by **Fujia Yang** (Fudan University & Nottingham University) &**Joseph H Hamilton** (Vanderbilt University)

This textbook has a companion problems and solutions manual. They are available as a paperback set with *Modern Atomic and Nuclear Physics (Revised Edition): Problems and Solutions Manual*.

**Contents:** Theory of Relativity; The Configuration of Atom: Rutherford's Model; Quantum States of Atoms: The Bohr Model; Fine Structure in Atomic Spectra: Electron Spin; Atoms Containing Many Electrons: The Pauli Exclusion Principle; X-Rays; Introductory Quantum Mechanics I: Concepts; and other topics.

**Readership:** Undergraduate and graduate students who are interested in modern atomic and nuclear physics.

812pp	Jan 2010	
978-981-283-678-6	US\$128	£84
978-981-283-679-3(pbk)	US\$75	£50

Set		
978-981-4374-26-2(pbk)	US\$85	£56

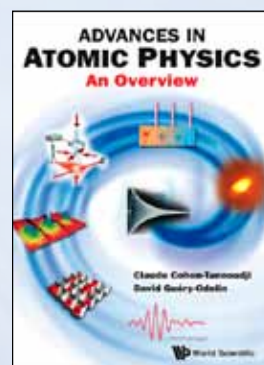
New

## ADVANCES IN ATOMIC PHYSICS

An Overview

by **Claude Cohen-Tannoudji** (Laboratory Kastler Brossel, France) &**David Guéry-Odelin** (Laboratory Collisions Agrégats Réactivité, France)

"Advances in Atomic Physics by Claude Cohen-Tannoudji and David Guéry-Odelin is destined to become a classic. This book describes the spectacular advances of recent decades that have transformed atomic physics into one of the most exciting fields in science. The single volume constitutes a guide, a handbook, a textbook, and an encyclopedia of atomic physics. Throughout, the voice of Claude Cohen-Tannoudji — whose own contributions were seminal to this transformation and whose lectures at the College de France are legendary — rings through with the elegance and transparency that rank him as among the great teachers of our time."



**Daniel Kleppner**  
Center for Ultracold Atoms, MIT

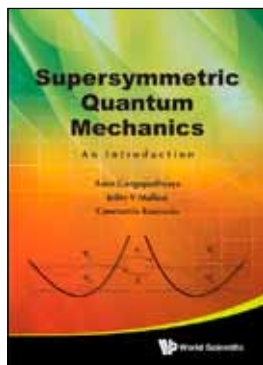
800pp	Aug 2011	
978-981-277-496-5	US\$98	£61
978-981-277-497-2(pbk)	US\$48	£30

## SUPERSYMMETRIC QUANTUM MECHANICS

### An Introduction

by **Asim Gangopadhyaya**, **Jeffrey V Mallow** (Loyola University), & **Constantin Rasinariu** (Columbia College Chicago)

**Contents:** Traditional Quantum Mechanics — Clues to SUSYQM; Operator Formalism in Quantum Mechanics; Algebraic Solution for the Harmonic Oscillator; Supersymmetric Quantum Mechanics; Shape Invariance; Supersymmetry and Its Breaking; Potential Algebra; Special Functions and SUSYQM; Isospectral Deformations; Generating Shape Invariant Potentials; Singular Potentials in Supersymmetric Quantum Mechanics; WKB and Supersymmetric WKB; The Quantum Hamilton-Jacobi Formalism and SUSYQM; Dirac Theory and SUSYQM; Scattering in SUSYQM; Natanzon Potentials; Summary; Solutions to Problems.



**Readership:** Undergraduates, graduates and academics in physics.

<b>292pp</b>	<b>Oct 2010</b>	
<b>978-981-4313-08-7</b>	<b>US\$80</b>	<b>£50</b>
<b>978-981-4313-09-4(pbk)</b>	<b>US\$40</b>	<b>£25</b>

World Scientific Lecture Notes in Physics

## INTRODUCTION TO SUPERSYMMETRY

(Second Edition)

by **Harald J W Müller-Kirsten** (University of Kaiserslautern, Germany) & **Armin Wiedemann** (Baden-Württemberg Cooperative State University Mannheim, Germany)

*“... a very careful and thorough discussion of supersymmetry culminating in supersymmetric gauge field theories ... a valuable book for those hoping to learn supersymmetry in first year postgraduate courses.”*

**Contemporary Physics**

**Readership:** Advanced undergraduate, graduate students, and professionals in theoretical and high-energy physics.

<b>452pp</b>	<b>Jan 2010</b>	
<b>978-981-4293-41-9</b>	<b>US\$90</b>	<b>£59</b>
<b>978-981-4293-42-6(pbk)</b>	<b>US\$58</b>	<b>£38</b>

**New**

## COSMIC SECRETS

Basic Features of Reality

by **Wolfram Schommers**  
(Institute for Scientific Computing, Germany)

**Contents:** Facts and Unsolved Questions in Physics; Evolution of Physical Laws; Are We Able to Find the Final Truth?; Quantum Phenomena and Cosmic Features; Unsolved Problems: Self-Energy of Particles, The Cosmological Constant; Nature of Time: Conventional Ideas and New Developments; How Is Reality Formed?; Is Everything Expressed by Processes?; Projection Theory and the Consequences for Our World View.



**Readership:** Academics and general readers interested in the natural sciences.

<b>300pp</b>	<b>Aug 2011</b>	
<b>978-981-283-643-4</b>	<b>US\$58</b>	<b>£38</b>

## INTRODUCTION TO THE THEORY OF THE EARLY UNIVERSE

### Hot Big Bang Theory

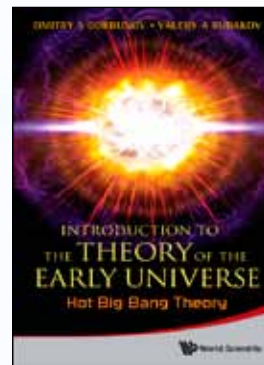
by **Dmitry S Gorbunov** (Institute for Nuclear Research of the Russian Academy of Sciences) & **Valery A Rubakov** (Institute for Nuclear Research of the Russian Academy of Sciences & Moscow State University)

This book is accompanied by another book by the same authors, *Introduction to the Theory of the Early Universe: Cosmological Perturbations and Inflationary Theory*.

**Contents:** Cosmology: A Preview; Homogeneous Isotropic Universe; Dynamics of Cosmological Expansion;  $\Lambda$ CDM: Cosmological Model with Dark Matter and Dark Energy; Thermodynamics in Expanding Universe; Recombination; Relic Neutrinos; Big Bang Nucleosynthesis; Dark Matter; Phase Transitions in the Early Universe; Generation of Baryon Asymmetry; Topological Defects and Solitons in the Universe; Color Pages.

**Readership:** Cosmologists, advanced undergraduate and graduate students.

<b>488pp</b>	<b>Feb 2011</b>	
<b>978-981-4322-24-9</b>	<b>US\$158</b>	<b>£103</b>
<b>978-981-4343-97-8(pbk)</b>	<b>US\$78</b>	<b>£51</b>



## INTRODUCTION TO THE THEORY OF THE EARLY UNIVERSE

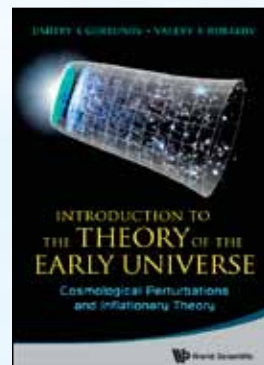
Cosmological Perturbations and Inflationary Theory

by **Dmitry S Gorbunov** (Russian Academy of Sciences) & **Valery A Rubakov** (Russian Academy of Sciences & Moscow State University)

**Contents:** Jeans Instability in Newtonian Gravity; Cosmological Perturbations in General Relativity. Equations of Linearized Theory; Evolution of Vector and Tensor Perturbations; Scalar Perturbations: Single-Component Fluids; Primordial Perturbations in Real Universe; Scalar Perturbations Before Recombination; Structure Formation; Beyond Ideal Fluid Approximation; Temperature of Cosmic Microwave Background; CMB Polarization; and other topics.

**Readership:** Cosmologists, advanced undergraduate and graduate students.

<b>504pp</b>	<b>Feb 2011</b>	
<b>978-981-4322-22-5</b>	<b>US\$156</b>	<b>£101</b>
<b>978-981-4343-78-7(pbk)</b>	<b>US\$76</b>	<b>£49</b>



**New**

## ADVENTURES IN COSMOLOGY

edited by **David Goodstein** (California Institute of Technology)

This volume tells of the quest for cosmology as seen by some of the finest cosmologists in the world. It starts with “Galaxy Formation from Start to Finish” and ends with “The First Supermassive Black Holes in the Universe,” exploring in between the grand themes of galaxies, the early universe, expansion of the universe, dark matter and dark energy. This up-to-date collection of review articles offers a general introduction to cosmology and is intended for all probing into the profound questions on where we came from and where we are going.

**Readership:** Students, researchers and academics interested in cosmology.

<b>420pp</b>	<b>Aug 2011</b>	
<b>978-981-4313-85-8</b>	<b>US\$86</b>	<b>£57</b>
<b>978-981-4313-86-5(ebook)</b>	<b>US\$112</b>	



## QUARKS, LEPTONS AND GAUGE FIELDS

(2nd Edition)

by **Kerson Huang** (MIT)

This second edition, which has been expanded, incorporates the following new subjects: Wilson's renormalization scheme, and its relation to perturbative renormalization; pitfalls in quantizing gauge fields, such as the Gribov ambiguity; the lattice as a consistent regularization; Monte Carlo methods of solution; and the issues, folklores, and scenarios of quark confinement. More than a quarter of the book comprise of new materials.

**Contents:** Introduction; Quarks; Maxwell field:  $U(1)$  Gauge Theory; Yang-Mills Fields: Non-Abelian Gauge Theories; Topological Solitons; Weinberg-Salam Model; Method of Path Integrals; Quantization of Gauge Fields; Renormalization; Method of Effective Potential; The Axial Anomaly; Quantum Chromodynamics; Lattice Gauge Theory; Quark Confinement.

**Readership:** High energy, mathematical and nuclear physicists.

<b>348pp</b>	<b>Oct 1992</b>	
<b>978-981-02-0659-8</b>	<b>US\$112</b>	<b>£74</b>
<b>978-981-02-0660-4(pbk)</b>	<b>US\$63</b>	<b>£42</b>

## QUARKS

**Frontiers in Elementary Particle Physics**

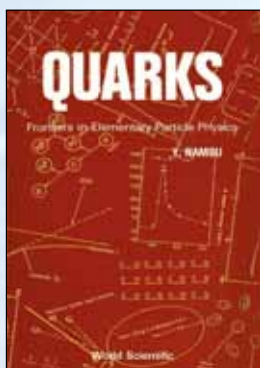
by **Yoichiro Nambu** (University of Chicago)

*"Professor Nambu's book is a useful addition to the library on elementary particles for the scientific layman."*

**Physics Bulletin** (UK)

The book explains in a precise and complete manner how elementary particle physics has evolved over the past 50 years. The historical development of the ideas that have shaped our thinking about the ultimate constituents of matter is traced out. The author has been associated with some of the originators of elementary particle theory and has made significant contributions to the field. Here, he gives a first-person description of some of the main developments leading to our present view of the universe.

<b>240pp</b>	<b>May 1985</b>	
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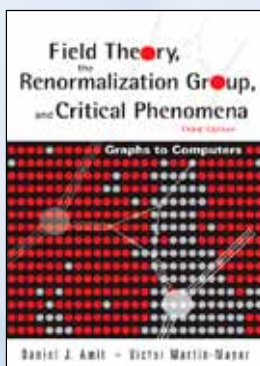
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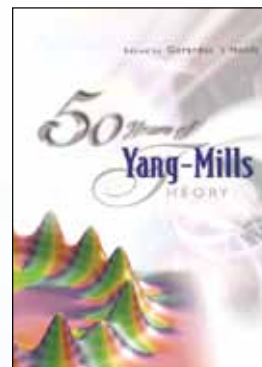
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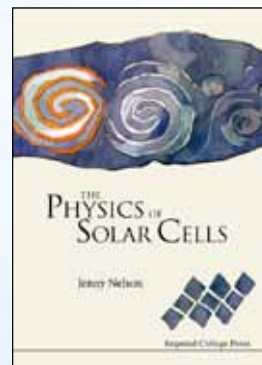
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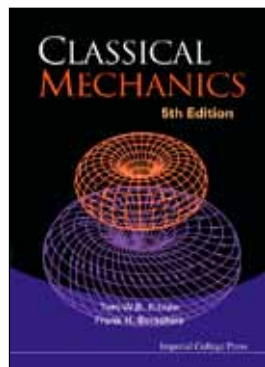
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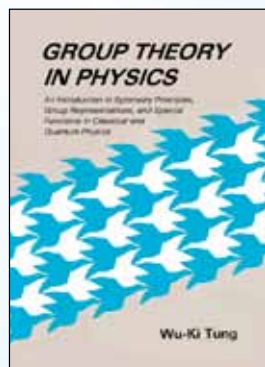
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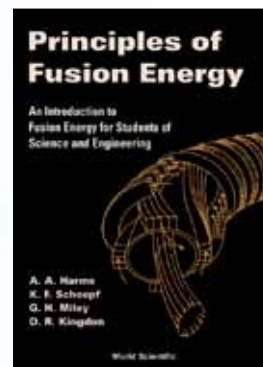
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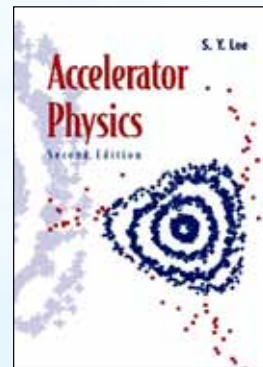
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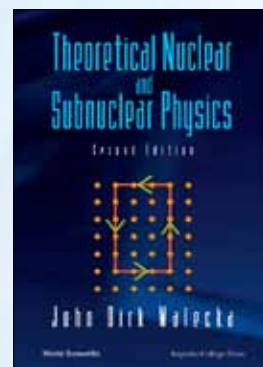
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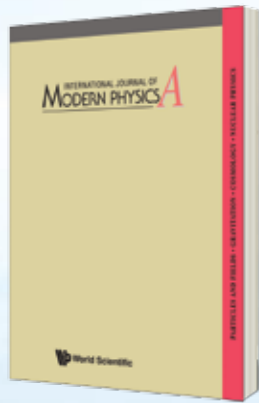
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