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It has been revised and brought up-to-date in accordance with the latest syllabi, to meet the needs of the students and teachers alike.

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This book has been prepared to enable the students to give a correct and to the pint answer to questions set in the examination. The answers have been arranged under various heads and subheads to faciliate the students
The book Ferromagnetic

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Resonance - Theory and Applications highlights recent advances at the interface between the science and technology of nanostructures (bilayer-multilayers, nanowires, spinel type nanoparticles, photonic crystal, etc.). The electromagnetic

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resonance techniques have become a central field of modern scientific and technical activity. The modern technical applications of ferromagnetic resonance are in spintronics, electronics, space navigation, remote-control equipment, radio engineering,

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electronic computers, maritime, electrical engineering, instrument-making and geophysical methods of prospecting.

Biophysics

Learn about the latest advances in high-brightness X-ray physics and technology with this authoritative

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text. Drawing upon the most recent theoretical developments, pre-eminent leaders in the field guide readers through the fundamental principles and techniques of high-brightness X-ray generation from both synchrotron and free-electron

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laser sources. A wide range of topics is covered, including high-brightness synchrotron radiation from undulators, self-amplified spontaneous emission, seeded high-gain amplifiers with harmonic generation, ultra-short pulses, tapering for higher power, free-

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electron laser oscillators, and X-ray oscillator and amplifier configuration. Novel mathematical approaches and numerous figures accompanied by intuitive explanations enable easy understanding of key concepts, whilst practical considerations of

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performance-improving techniques and discussion of recent experimental results provide the tools and knowledge needed to address current research problems in the field. This is a comprehensive resource for graduate students, researchers

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and practitioners who design, manage or use X-ray facilities.
Foundations of Fluid Dynamics
Applied Mechanics Reviews
Reviews Of Accelerator Science And Technology - Volume 9:
Technology And Applications Of Advanced Accelerator Concepts

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Theory and Computation of
Electromagnetic Fields
Refresher Course in B.Sc. Physics
(Vol. I)

Synchrotron Radiation and Free-
Electron Lasers

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first-order equations, linear equations with constant coefficients, simultaneous equations, theory of nonlinear differential equations, much more.

Nearly 900 worked examples, exercises, solutions. 1961 edition.

Reviews the fundamental concepts behind the theory and computation of

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electromagnetic fields The book is divided in two parts. The first part covers both fundamental theories (such as vector analysis, Maxwell's equations, boundary condition, and transmission line theory) and advanced topics (such as wave transformation, addition theorems, and fields in layered media)

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in order to benefit students at all levels. The second part of the book covers the major computational methods for numerical analysis of electromagnetic fields for engineering applications. These methods include the three fundamental approaches for numerical analysis of electromagnetic fields: the

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finite difference method (the finite difference time-domain method in particular), the finite element method, and the integral equation-based moment method. The second part also examines fast algorithms for solving integral equations and hybrid techniques that combine different

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numerical methods to seek more efficient solutions of complicated electromagnetic problems. Theory and Computation of Electromagnetic Fields, Second Edition: Provides the foundation necessary for graduate students to learn and understand more advanced topics Discusses

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electromagnetic analysis in rectangular, cylindrical and spherical coordinates
Covers computational electromagnetics in both frequency and time domains
Includes new and updated homework problems and examples Theory and Computation of Electromagnetic Fields, Second Edition is written for advanced

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undergraduate and graduate level electrical engineering students. This book can also be used as a reference for professional engineers interested in learning about analysis and computation skills.

Volume 16 of the Handbook on the Properties of Magnetic Materials, as the

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preceding volumes, has a dual purpose. As a textbook it is intended to be of assistance to those who wish to be introduced to a given topic in the field of magnetism without the need to read the vast amount of literature published. As a work of reference it is intended for scientists active in magnetism research.

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To this dual purpose, Volume 16 of the Handbook is composed of topical review articles written by leading authorities. In each of these articles an extensive description is given in graphical as well as in tabular form, much emphasis being placed on the discussion of the experimental material in the framework

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of physics, chemistry and material science. It provides the readership with novel trends and achievements in magnetism. * composed of topical review articles written by leading authorities. * intended to be of assistance to those who wish to be introduced to a given topic in the field

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of magnetism. * as a work of reference it is intended for scientists active in magnetism research. * provides the readership with novel trends and achievements in magnetism.

Computational Electrodynamics is a vast research field with a wide variety of tools. In physics the principle of

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gauge invariance plays a pivotal role as a guide towards a sensible formulation of the laws of nature as well as computing the properties of elementary particles using the lattice formulation of gauge theories, yet the gauge principle has played a much less pronounced role in performing computation in classical

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electrodynamics. In this work the author will demonstrate that starting from the gauge formulation of electrodynamics using the electromagnetic potentials leads to computational tools that can very well compete with the conventional electromagnetic field-based tools. Once

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accepting the formulation based on gauge fields, the computational code is very transparent due to the mimetic mapping of the electrodynamic variables on the computational grid. Although the illustrations and applications originate from microelectronic engineering, the method

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has a much larger range of applicability. Therefore this book is of interest to everyone having interest in computational electrodynamics. The volume is organized as follows: In part 1, a detailed introduction and overview is presented of the Maxwell equations as well as the derivation of the current and

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charge densities is different materials. Semiconductors are responding to electromagnetic fields in a non-linear way and the induced complications are discussed in detail. In part 2, the transition of the theory of electrodynamics, using the gauge potentials, to a formulation that can

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serve as the gateway to computational code is presented. In part 3, the feasibility and success of the methods of part 2 are demonstrated by a collection of microelectronic device designs. Part 4 focuses on a set of topical themes that brings the reader to the frontier of research in building the simulation tools

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using the gauge principle in computational electrodynamics.

Technical topics discussed in the book

include: Electromagnetic Field

Equations Constitutive

Relations Discretization and Numerical

Analysis Finite Element and Finite

Volume Methods Design of Integrated

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Passive Components

A Tourist Guide for Mathematicians

Laser Handbook

Density Functional Theory

Japanese Journal of Applied Physics

**Proceedings of the 2nd International
Symposium on High Field Magnetism,
Leuven, Belgium, 20-23 July 1988**

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A Gauge Approach with Applications in Microelectronics

Quantum field theory has been a great success for physics, but it is difficult for mathematicians to learn because it is mathematically incomplete.

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Folland, who is a mathematician, has spent considerable time digesting the physical theory and sorting out the mathematical issues in it. Fortunately for mathematicians, Folland is a gifted expositor. The purpose of

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this book is to present the elements of quantum field theory, with the goal of understanding the behavior of elementary particles rather than building formal mathematical structures, in a form that will be

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comprehensible to mathematicians. Rigorous definitions and arguments are presented as far as they are available, but the text proceeds on a more informal level when necessary, with due care in

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identifying the difficulties. The book begins with a review of classical physics and quantum mechanics, then proceeds through the construction of free quantum fields to the perturbation-theoretic

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development of interacting field theory and renormalization theory, with emphasis on quantum electrodynamics. The final two chapters present the functional integral approach and the elements of gauge field

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theory, including the Salam-Weinberg model of electromagnetic and weak interactions.

This publication covers topics in the area of applied electromagnetics and

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mechanics. Since starting in Japan in 1988, the ISEM has become a well-known international forum on applied electromagnetics.

The first Nato Advanced Studies Institute entirely devoted to

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density functional theory was held in Portugal in September 1983. The proceedings of this School, published in early 1985, is still used as a standard reference covering the basic development of the theory and

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applications in atomic, molecular, solid state and nuclear physics. However, astonishing progress has been achieved in the intervening years: The foundations of the theory have been extended to cover excited

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states and time dependent problems more fully, density functional theory of classical liquids and superconducting systems has been addressed and extensions to relativistic, that is, field theoretical systems, as

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well as a more thorough discussion of magnetic field problems have been presented. In addition, new functionals have been devised, for instance under the heading of generalised gradient expansions, and the

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number of applications in the traditional fields has steadily increased, in particular in chemistry. Applications in new fields, as for instance the structure of atomic clusters and the marriage of density functional

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theory with molecular dynamics and simulated annealing, have provided additional impetus to the field of density functional theory.

High Field Magnetism presents the proceedings of the

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International Symposium on High Field Magnetism held at the Osaka University and Hotel Plaza in Osaka on September 13-14, 1982 as a satellite symposium of the International Conference on

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Magnetism-1982-Kyoto. The symposium tackled a wide variety of high field generation methods and material systems, with magnetism orientation as the main objective. A special Technical Exposition was held in

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the poster session where representatives from MIT, Grenoble, and other high field facilities were invited to give a descriptive review of each laboratory. This book is divided into eight parts, beginning with

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an introductory chapter into the subject of high field magnetism. The succeeding parts focus on magnetic interactions and phase transitions in high magnetic fields; metals and alloys in high magnetic fields; high field

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superconductivity; spin and charge fluctuations in high magnetic fields; high field magneto-optics; high field magnetic resonance; and high magnetic field facilities and techniques. This book will be of

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interest to practitioners in the fields of cryogenic engineering and applied physics.

Monograph

Electric and Magnetic Fields

Lectures On Accelerator Physics

Handbook of Magnetic Materials

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Problems Of Fundamental
Modern Physics - Proceedings
Of The 4th Winter School On
Hadronic Physics
High Field Magnetism

*This book is written for students
who ever wondered about the*

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mysterious and fascinating world of particle accelerators. What exciting physics and technologies lie within? What clever and ingenious ideas were applied in their seven decades of evolution? What promises still lay ahead in

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the future?Accelerators have been driving research and industrial advances for decades. This textbook illustrates the physical principles behind these incredible machines, often with intuitive pictures and simple mathematical

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models. Pure formalisms are avoided as much as possible. It is hoped that the readers would enjoy the fascinating physics behind these state-of-the-art devices. The style is informal and aimed for a graduate level without

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prerequisite of prior knowledge in accelerators. To serve as a textbook, references are listed only on the more established original literature and review articles instead of the constantly changing research frontiers.

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The main goal of the School is to guide the young physicists on the methods of carrying out research and to propose to them some present open problems on fundamental modern physics. The School permits the encounter and

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the exchange of ideas of expert scientists belonging to different areas of research in fundamental modern physics.

This book systematically describes the fundamentals of Magnetic shape memory alloys (MSMAs),

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with an emphasis on low-dimensional structures such as foams, microwires and microparticles. The respective chapters address basic concepts and theories, the fabrication of various architectures, microstructure

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tailoring, property optimization and cutting-edge applications. Taken together, they provide a clear understanding of the correlation between processing and the microstructural properties of MSMA, which are illustrated in

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over two hundred figures and schematics. Given its scope and format, the book offers a valuable resource for a broad readership in various fields of materials science and engineering, especially for researchers, students and

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engineers.

Amorphous Metals and Semiconductors contains the proceedings of an international workshop held at Coronado, California, USA on May 12-18, 1985. Organized into five parts,

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this book first looks into the historical perspective on semiconductors and metals. This book then explains the glass formation, magnetic glasses, and amorphous semiconductors. The mechanical and chemical

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properties of these materials are also given.

Physics of the Early Universe

Computational Electrodynamics

Patents

Magnetic Shape Memory Alloys

Quantum Field Theory

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Conceptual Foundations of Modern Particle Physics

The dimmed outlines of phenomenal things all into one another unless we put on the merge focusing-glass of theory, and screw it up some times to one pitch of definition and sometimes

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to another, so as to see down into different depths through the great millstone of the world James Clerk Maxwell (1831 - 1879) For a long time after the foundation of the modern theory of electromagnetism by James Clerk Maxwell in the 19th

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century, the mathematical approach to electromagnetic field problems was for a long time dominated by the analytical investigation of Maxwell's equations. The rapid development of computing facilities during the last century has then necessitated

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appropriate numerical methods and algorithmic tools for the simulation of electromagnetic phenomena. During the last few decades, a new research area "Computational Electromagnetics" has emerged comprising the mathematical analysis,

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design, implementation, and application of numerical schemes to simulate all kinds of relevant electromagnetic processes. This area is still rapidly evolving with a wide spectrum of challenging issues featuring, among others, such

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problems as the proper choice of spatial discretizations (finite differences, finite elements, finite volumes, boundary elements), fast solvers for the discretized equations (multilevel techniques, domain decomposition methods, multipole,

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panel clustering), and multiscale aspects in microelectronics and micromagnetics.

During the week of June 29 - July 5, 2008, over 300 scientists and engineers from 30 countries spanning five continents converged at the historic

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La Fonda Hotel in the city of Santa Fe, New Mexico, USA to participate in the 12th International Conference on Martensitic Transformations (ICOMAT-08) to fathom the peculiar world of certain crystalline materials that undergo structural change when

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cooled or stressed. Many of these materials can restore their original shape when reheated, thus the name "Shape Memory Alloys". In the spirit of Santa Fe, a central theme of ICOMAT-08 was INTEGRATION across many dimensions.

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This Proceedings features a broad range of computational mechanics papers on both solid and fluid mechanics as well as electromagnetics, acoustics, heat transfer and other interdisciplinary problems. Topics covered include theoretical

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developments, numerical analysis, intelligent and adaptive solution strategies and practical applications. Excerpt from Mathematical and Physical Papers, Vol. 2 This second volume contains the Reprint of my papers on Mathematical and Physical

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subjects, including the titles of all published from April 1853 to February 1856, and the text Of all Of them, except those which are to be found in my volume of collected papers on Electro statics and Magnetism. About the Publisher

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Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally

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reconstruct the work, preserving the original format whilst repairing imperfections present in the aged copy. In rare cases, an imperfection in the original, such as a blemish or missing page, may be replicated in our edition. We do, however, repair the

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vast majority of imperfections successfully; any imperfections that remain are intentionally left to preserve the state of such historical works.

Regular papers & short notes. Part 1
Proceedings of an International

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Workshop, Coronado, California,
USA 12 – 18 May 1985

Bell Telephone System Technical
Publications

From Numerical Models to Industrial
Applications

6th International Symposium, ISHPC

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2005, Nara, Japan, September 7-9,
2005, First International Workshop
on Advance Low Power Systems,
ALPS 2006, Revised Selected Papers
Official Gazette of the United States
Patent and Trademark Office

Since its invention in the 1920s,

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particle accelerators have made tremendous progress in accelerator science, technology and applications. However, the fundamental acceleration principle, namely, to apply an external radiofrequency (RF) electric field to accelerate charged particles,

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remains unchanged. As this method (either room temperature RF or superconducting RF) is approaching its intrinsic limitation in acceleration gradient (measured in MeV/m), it becomes apparent that new methods with much higher acceleration gradient (measured in

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GeV/m) must be found for future very high energy accelerators as well as future compact (table-top or room-size) accelerators. This volume introduces a number of advanced accelerator concepts (AAC) — their principles, technologies and potential

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applications. For the time being, none of them stands out as a definitive direction in which to go. But these novel ideas are in hot pursuit and look promising. Furthermore, some AAC requires a high power laser system. This has the implication of bringing two

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different communities — accelerator and laser — to join forces and work together. It will have profound impact on the future of our field. Also included are two special articles, one on "Particle Accelerators in China" which gives a comprehensive overview of the

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rapidly growing accelerator community in China. The other features the person-of-the-issue who was well-known nuclear physicist Jerome Lewis Duggan, a pioneer and founder of a huge community of industrial and medical accelerators in the US.

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This book constitutes the refereed joint post-conference proceedings of the 6th International Symposium on High-Performance Computing, ISHPC 2005, held in, Japan, in 2005. It also includes the refereed post-proceedings of the First International Workshop on

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Advanced Low Power Systems 2006, ALPS2006, and some from the Workshop on Applications for PetaFLOPS Computing, APC 2005. A total of 42 papers were carefully selected from 76 submissions, covering a huge range of topics. After a brief introduction into the

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theory of electromagnetic fields and the definition of the field quantities the book teaches the analytical solution methods of Maxwell's equations by means of several characteristic examples. The focus is on static and stationary electric and magnetic fields, quasi

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stationary fields, and electromagnetic waves. For a deeper understanding, the many depicted field patterns are very helpful. The book offers a collection of problems and solutions which enable the reader to understand and to apply Maxwell's theory for a

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broad class of problems including classical static problems right up to waveguide eigenvalue problems. The last decade has witnessed a breathtaking expansion of ideas concerning the origin and evolution of the universe. Researchers in cosmology thus need an

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unprecedented wide background in diverse areas of physics. Bridging the gap that has developed, Physics of the Early Universe explains the foundations of this subject. This postgraduate-/research-level volume covers cosmology, gauge theories, the standard model,

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cosmic strings, and supersymmetry.

A Collection of Problems

Ferromagnetic Resonance

Preparation, Martensitic

Transformation and Properties

Amorphous Metals and

Semiconductors

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Principles of Nanomagnetism

Electromagnetic Field Theory

The second edition of this book on nanomagnetism presents the basics and latest studies of low-dimensional magnetic nano-objects. It highlights the

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intriguing properties of nanomagnetic objects, such as thin films, nanoparticles, nanowires, nanotubes, nanodisks and nanorings as well as novel phenomena like spin currents. It also describes how

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nanomagnetism was an important factor in the rapid evolution of high-density magnetic recording and is developing into a decisive element of spintronics. Further, it presents a number of biomedical

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applications. With exercises and solutions, it serves as a graduate textbook.

For scientific, technological and organizational reasons, the end of World War II (in 1945) saw a rapid acceleration in the tempo

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of discovery and understanding in nuclear physics, cosmic rays and quantum field theory, which together triggered the birth of modern particle physics. The first fifteen years (1945-60) following the war's end ? the

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?Startup Period? in modern particle physics -witnessed a series of major experimental and theoretical developments that began to define the conceptual contours (non-Abelian internal symmetries, Yang-Mills fields,

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renormalization group, chirality invariance, baryon-lepton symmetry in weak interactions, spontaneous symmetry breaking) of the quantum field theory of three of the basic interactions in nature

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(electromagnetic, strong and weak). But it took another fifteen years (1960-75) ? the ?Heroic Period? in modern particle physics ? to unravel the physical content and complete the mathematical formulation of the

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standard gauge theory of the strong and electroweak interactions among the three generations of quarks and leptons. The impressive accomplishments during the ?Heroic Period? were followed

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by what is called the ?period of consolidation and speculation (1975-1990)?, which includes the experimental consolidation of the standard model (SM) through precision tests, theoretical consolidation of SM through the

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search for more rigorous mathematical solutions to the Yang-Mills-Higgs equations, and speculative theoretical excursions ?beyond SM?. Within this historical-conceptual framework, the author ? himself

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a practicing particle theorist for the past fifty years ? attempts to trace the highlights in the conceptual evolution of modern particle physics from its early beginnings until the present time. Apart from the first chapter

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? which sketches a broad overview of the entire field ? the remaining nine chapters of the book offer detailed discussions of the major concepts and principles that prevailed and were given wide currency during

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each of the fifteen-year periods that comprise the history of modern particle physics. Those concepts and principles that contributed only peripherally to the standard model are given less coverage but an attempt is

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made to inform the reader about such contributions (which may turn out to be significant at a future time) and to suggest references that supply more information. Chapters 2 and 3 of the book cover a range of topics

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that received dedicated attention during the ?Startup Period? although some of the results were not incorporated into the structure of the standard model. Chapters 4-6 constitute the core of the book and try to recapture

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much of the conceptual excitement of the "Heroic Period", when quantum electrodynamics (QED) and quantum chromodynamics (QCD) received their definitive formulation. [It should be

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emphasized that, throughout the book, logical coherence takes precedence over historical chronology (e.g. some of the precision tests of QFD are discussed in Chapter 6)]. Chapter 7 provides a fairly

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complete discussion of the chiral gauge anomalies in four dimensions with special application to the standard model (although the larger unification models are also considered). The remaining three

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chapters of the book (Chapters 7-10) cover concepts and principles that originated primarily during the ?Period of Consolidation and Speculation? but, again, this is not a literal statement. Chapters 8 and 9

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report on two of the main directions that were pursued to overcome acknowledged deficiencies of the standard model: unification models in Chapter 8 and attempts to account for the existence of

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precisely three generations of quarks and leptons, primarily by means of preon models, in Chapter 9. The most innovative of the final three chapters of the book is Chapter 10 on topological conservation laws.

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This last chapter tries to explain the significance of topologically non-trivial solutions in four-dimensional (space-time) particle physics (e.g. 't Hooft-Polyakov monopoles, instantons, sphalerons, global SU(2)

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anomaly, Wess-Zumino term, etc.) and to reflect on some of the problems that have ensued (e.g. the ?strong CP problem? in QCD) from this effort. It turns out that the more felicitous topological applications of field

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theory are found ? as of now ? in condensed matter physics; these successful physical applications (to polyacetylene, quantized magnetic flux in type-II low temperature superconductivity, etc.) are discussed in Chapter 10,

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as a good illustration of the conceptual unity of modern physics.

This book contains the edited versions of the papers presented at the Second International Workshop on Electric and

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Magnetic Fields held at the Katholieke Universiteit van Leuven (Belgium) in May 1994. This Workshop deals with numerical solutions of electromagnetic problems in real life applications. The topics

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include coupled problems (thermal, mechanical, electric circuits), CAD & CAM applications, 3D eddy current and high frequency problems, optimisation and application oriented numerical problems.

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This workshop was organised jointly by the AIM (Association of Engineers graduated from de Montefiore Electrical Institute) together with the Departments of Electrical Engineering of the Katholieke Universiteit van

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Leuven (Prof. R. Belmans), the University of Gent (Prof. J. Melkebbek) and the University of Liege (Prof. W. Legros). These laboratories are working together in the framework of the Pole d'Attraction Interuniversitaire -

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Inter-University Attractie-Pole 51 - on electromagnetic systems led by the University of Liege and the research work they perform covers most of the topics of the Workshop. One of the principal aims of this Workshop was to

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provide a bridge between the electromagnetic device designers, mainly industrialists, and the electromagnetic field computation developers. Therefore, this book contains a continuous spectrum of papers

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from application of electromagnetic models in industrial design to presentation of new theoretical developments. This book documents the tremendous progress in the use of nanotechnology for a range of

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bioapplications with the aim of providing students, researchers, technicians, and other professionals with an up-to-date overview of the field. After a general introduction to the surface modifications of

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nanoparticles required for different biological applications, and to the properties of the modified nanoparticles, a series of chapters describe the state of the art in respect of different types of nanoparticle, including

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silica nanoparticles, fluorescent nanomaterials, metal nanoparticles, magnetic nanoparticles, carbon-based nanostructures, and other novel nanomaterials. Detailed information is supplied on

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methods of preparation, chemical and physical properties, and current and potential applications. The closing chapters discuss lithography methods for the top-down approach to nanoparticle

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synthesis and the use of spectroscopic studies as a tool for the characterization of each nanoparticle. Future prospects and challenges for the development of further nanomaterials with

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bioapplications are also covered.

Biophysics

Computational Electromagnetics

Mathematical and Physical

Papers

Proceedings of the Thirty Sixth

Scottish Universities Summer

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School in Physics, Edinburgh,
July 24 - August 11 1989
Proceedings of the First Joint
Japan/US Symposium on
Boundary Element Methods,
University of Tokyo, Tokyo,
Japan, 3-6 October 1988

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Modern Quantum Mechanics
This monograph on fluid mechanics is not only a superb and unique textbook but also an impressive piece of research. It is the only

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textbook that fully covers turbulence, all the way from the works of Kolmogorov to modern dynamics.

High Field Magnetism covers the proceedings

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of the 2nd International Symposium on High Field Magnetism held in Leuven, Belgium on July 20-23, 1988. The book focuses on magnetism, superconductivity,

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superconductors, and magnetic properties. The selection first offers information on DC laboratory electromagnets and design of magnet coils

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for semi-continuous magnetic fields.

Discussions focus on resistive and hybrid magnets, power, stress, and homogeneity of the field. The book then

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examines production of ultra-high magnetic fields and their application to solid state physics; laboratory facility for the magnetic flux

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compression systems using large explosives; and production of repeating pulsed high magnetic field. The book takes a look at an electronic monitoring

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system for hybrid magnets; non-destructive quasi-static pulsed magnetic fields at Toulouse; and high field laboratory for superconducting

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materials at the Institute for Materials Research at Tohoku University. The manuscript then ponders on high magnetic field facility at Osaka

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University; advances in high field magnetism at Osaka; and status and prospects of superconducting Chevrel phase wires for high magnetic field

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applications. The selection is a dependable reference for readers interested in high field magnetism. Spintronics Handbook, Second Edition offers an

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update on the single most comprehensive survey of the two intertwined fields of spintronics and magnetism, covering the diverse array of

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materials and structures, including silicon, organic semiconductors, carbon nanotubes, graphene, and engineered nanostructures. It

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focuses on seminal pioneering work, together with the latest in cutting-edge advances, notably extended discussion of two-dimensional

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materials beyond graphene, topological insulators, skyrmions, and molecular spintronics. The main sections cover physical phenomena, spin-

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dependent tunneling, control of spin and magnetism in semiconductors, and spin-based applications. Modern Quantum Mechanics is a classic graduate

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manual for instructors using this textbook can be downloaded from www.cambridge.org/9781108422413.

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