

Optical Resonance And Two Level Atoms Dover Books On Physics

DIVNo mathematical background is necessary to appreciate this classic of probability theory, which remains unsurpassed in its clarity and readability. It explores physical foundations, logical superstructure, and applications. 1888 edition. /div

New chapters add coverage of current topics such as cavity polaritons, photonic structures, bulk semiconductors and structures of reduced dimensionality. The mathematics is kept as elementary as possible, sufficient for an intuitive understanding of the experimental results and techniques treated.

Clearly written treatment elucidates fundamental concepts and demonstrates their plausibility and usefulness. Language is informal, examples are vivid and lively, and the perspective is fresh. Based on lectures delivered to engineering students, this work will also be valued by scientists, engineers, technicians, businessmen, anyone facing energy challenges of the future.

Undergraduate-level introduction to linear algebra and matrix theory. Explores matrices and linear systems, vector spaces, determinants, spectral decomposition, Jordan canonical form, much more. Over 375 problems. Selected answers. 1972 edition.

The Virginia Housewife, Or, Methodical Cook

A First Course in Partial Differential Equations with Complex Variables and Transform Methods

Semiconductor Optics

Resonance Fluorescence, Optical Bistability, Superfluorescence

An Introduction

Foundations and Fundamental Concepts of Mathematics

Advances in Magnetic Resonance: The Waugh Symposium, Volume 14 is a collection of manuscripts presented at the 1989 symposium on "High Resolution NMR in Solids", held at the Massachusetts Institute of Technology. The contributors provide 20- to 30-page articles consistent with AMR's traditional emphasis on quantitative analysis of NMR techniques. Organized into 13 chapters, this book discusses the principles triple-quantum filtered two-dimensional exchange spectroscopy and its application in the measurement of cross correlation between pairs of dipole-dipole interactions. It then describes alternative ways of using fictitious spin in pulsed nuclear quadrupole resonance or NMR. General topics on the application of optical spectroscopy; the saturation of spin-spin energy by slow continuous bulk rotation; the frequency-switched Lee-Goldburg pulse cycle; and high-resolution proton NMR in solid systems are also explored. A chapter examines an entirely different view of spin dynamics in the presence of radio-frequency fields. This book also deals with the theoretical background and application of solid-state and zero-field NMR spectroscopies to structure determination. Lastly, the utilization of the Floquet formalism in the design of broadband propagators in two-level systems and the two classes of novel NMR phenomena related to the symmetrization postulate are discussed. Analytical and quantum chemists, physicists, biochemists, and materials science researchers will find this book invaluable.

Designed as a text for a one-year first course in topology, this authoritative volume offers an excellent general treatment of the main ideas of topology. It includes a large number and variety of topics from classical topology as well as newer areas of research activity.

For students of mathematical biology, an introduction to taxonomic characters, measurement of similarity, analysis of principal components, multidimensional scaling, cluster analysis, identification and assignment techniques, and the construction of evolutionary trees.

Classic analysis of the foundations of statistics and development of personal probability, one of the greatest controversies in modern statistical thought. Revised edition. Calculus, probability, statistics, and Boolean algebra are recommended.

Atom Optics and Space Physics

Matrices and Linear Transformations

Dissipative Systems in Quantum Optics

The Logic of Chance

Galois Theory

Comprehensive treatment of light-scattering properties of small, independent particles, including a full range of useful approximation methods for researchers in chemistry, meteorology, and astronomy. 46 tables. 59 graphs. 44 illustrations.

This book provides a comprehensive introduction to the theoretical and experimental studies of atomic optical bistability and multistability, and their dynamical properties in systems with two- and three-level inhomogeneously-broadened atoms inside an optical cavity. By making use of the modified linear absorption and dispersion, as well as the greatly enhanced nonlinearity in the three-level electromagnetically induced transparency system, the optical bistability and efficient all-optical switching can be achieved at relatively low laser powers, which can be well controlled and manipulated. Until now, the rapid rate of progress in applications of multilevel systems in cross-disciplinary field has made it difficult to newcomers to the field to obtain a broad overview of this topic. This monograph will serve the purpose. Contents: IntroductionAtomic Optical Bistability in a Two-level SystemThree-level Atoms as the Intracavity Medium and Atomic Optical BistabilityAtomic Optical MultistabilityDynamical Instability to ChaosControlled All-optical SwitchingDynamical Hysteresis and Noise-induced BehaviorsConclusion and Outlooks Readership: Graduate students, researchers and academics in optical physics.

Classic work presents Conrady's complete system of optical design. Part One covers all ordinary ray-tracing methods, together with the complete theory of primary aberration and as much of higher aberration as is needed for the design of telescopes, low-power microscopes, and simple optical systems.

This text bridges the gap between beginning and advanced calculus. It offers a systematic development of the real number system and careful treatment of mappings, sequences, limits, continuity, and metric spaces. 1963 edition.

Counterexamples in Topology

Advances in Magnetic Resonance

Proceedings of the International School of Physics "Enrico Fermi", Course CLXVIII, Varenna on Lake Como, Villa Monastero, 3-13 July 2007

Statistical Optimization for Geometric Computation

Basic Algebra I

Fluvial Processes in Geomorphology

attention from different communities of physics." --Book Jacket.

The term 'nonclassical states' refers to the quantum states that cannot be produced in the usual sources of light, such as lasers or lamps, rather than those requiring more sophisticated apparatus for their production. Theory of Non-classical States of Light describes the current status of the theory of nonclassical states of light including many new and important results as well as introductory material and the history of the subject. The authors concentrate on the most important types of nonclassical states, namely squeezed, even/odd ('Schrodinger cat') and binomial states, including their generalizations. However, a review of other types of nonclassical is also given in the introduction, and methods for generating nonclassical states on various processes of light-matter interaction, their phase-space description, and the time evolution of nonclassical states in these processes is presented in separate chapters. This contributed volume contains all of the necessary formulae and references required to gain a good understanding of the principles and current status of the field. It will provide a valuable information resource for advanced students and researchers in quantum physics.

This third edition of a popular, well-received text offers undergraduates an opportunity to obtain an overview of the historical roots and the evolution of several areas of mathematics. The selection of topics conveys not only their role in this historical development of mathematics but also their value as bases for understanding the changing nature of mathematics. Among the topics covered in this wide-ranging text are: mathematics before Euclid, Euclid's Elements, non-Euclidean geometry, algebraic structure, formal axiomatics, the real numbers system, sets, logic and philosophy and more. The emphasis on axiomatic procedures provides important background for studying and applying more advanced topics, while the inclusion of the historical roots of both algebra and geometry provides essential information for prospective teachers of school mathematics. The readable style and sets of challenging exercises from the popular earlier editions have been continued and extended in the present edition, making this a very welcome and useful version of a classic treatment of the foundations of mathematics. "A truly satisfying book." – Dr. Bruce E. Meserve, Professor Emeritus, University of Vermont.

Focusing on the principles of quantum mechanics, this text for upper-level undergraduates and graduate students introduces and resolves special physical problems with more than 100 exercises. 1967 edition.

The Foundations of Statistics

Advances in Magnetic and Optical Resonance

Elements of Quantum Optics

Algebraic Topology

Controlling Steady-State and Dynamical Properties of Atomic Optical Bistability

Optical Resonance and Two-Level Atoms

*Optical Resonance and Two-Level Atoms*Courier Corporation

This classic focuses on the gathering, handling, and interpretation of numerical data from zoological investigations. Contents include types and properties of numerical data, mensuration, frequency distributions and grouping, patterns of frequency distributions, measures of central tendency, measures of dispersion and variability, populations and samples, and probability. "Excellent." – Florida Scientist.

A pioneering study that encompasses both field and laboratory research, this text explores the landscapes of mountains, rivers, and seacoasts. Topics include weathering, climate, and erosion. 1964 edition.

Over 140 examples, preceded by a succinct exposition of general topology and basic terminology. Each example treated as a whole. Numerous problems and exercises correlated with examples. 1978 edition. Bibliography.

Optics and Optical Instruments

The Waugh Symposium

Optimal Control Theory

Recent Developments in Quantum Optics

Thermodynamics

An Introduction with Special Reference to Practical Applications

A classic text and standard reference for a generation, this volume covers all undergraduate algebra topics, including groups, rings, modules, Galois theory, polynomials, linear algebra, and associative algebra. 1985 edition.

Exploration of stochastic control theory in terms of analysis, parametric optimization, and optimal stochastic control. Limited to linear systems with quadratic criteria; covers discrete time and continuous time systems. 1970 edition.

In the nineteenth century, French mathematician Evariste Galois developed the Galois theory of groups-one of the most penetrating concepts in modern mathematics. The elements of the theory are clearly presented in this second, revised edition of a volume of lectures delivered by noted mathematician Emil Artin. The book has been edited by Dr. Arthur N. Milgram, who has also supplemented the work with a Section on Applications. The first section deals with linear algebra, including fields, vector spaces, homogeneous linear equations, determinants, and other topics. A second section considers extension fields, polynomials, algebraic elements, splitting fields, group characters, normal extensions, roots of unity, Noether equations, Jummer's fields, and more. Dr. Milgram's section on applications discusses solvable groups, permutation groups, solution of equations by radicals, and other concepts.

Designed by two MIT professors, this authoritative text transcends the limitations and ambiguities of traditional treatments to develop a deep understanding of the fundamentals of thermodynamics and its energy-related applications. Basic concepts and applications are discussed in complete detail, with attention to generality, rigorous definitions, and logical consistency. More than 300 solved problems span a wide range of realistic energy systems and processes.

Sets, Sequences and Mappings

Differential Forms

Theory of Nonclassical States of Light

The Basic Concepts of Analysis

The Mathematical Principles of Quantum Mechanics

Foundations and Applications

Superb high-level study of one of the most influential classics in mathematics examines landmark 1859 publication entitled "On the Number of Primes Less Than a Given Magnitude," and traces developments in theory inspired by it. Topics include Riemann's main formula, the prime number theorem, the Riemann-Siegel formula, large-scale computations, Fourier analysis, and other related topics. English translation of Riemann's original document appears in the Appendix.

Geared toward upper-level undergraduates, this text introduces three aspects of optimal control theory: dynamic programming, Pontryagin's minimum principle, and numerical techniques for trajectory optimization. Numerous problems, which introduce additional topics and illustrate basic concepts, appear throughout the text. Solution guide available upon request. 131 figures. 14 tables. 1970 edition.

Clear, comprehensive graduate-level account of basic principles involved in all quantum optical resonance phenomena, hailed in Contemporary Physics as "a valuable contribution to the literature of non-linear optics." 53 illustrations.

A young soldier in training for the special forces in Vietnam learns how to rid himself of anxieties under stress and other emotional factors that may hinder his effectiveness in combat.

Phase Fluctuation and Damping in Two-level Optical Resonance

Theory and Practice

Quantum Optics

Riemann's Zeta Function

Introductory Quantum Optics

Topology

Suitable for advanced undergraduate and graduate students, this text presents the general properties of partial differential equations, including the elementary theory of complex variables. Topics include one-dimensional wave equation, properties of elliptic and parabolic equations, separation of variables and Fourier series, nonhomogeneous problems, and analytic functions of a complex variable. Solutions. 1965 edition.

Advances in Magnetic and Optical Resonance contains three articles which review quite fundamentally different aspects of coherent spectroscopy. An enormous variety of effects can be observed when optical and spin resonances are coupled, usually by a combination of radio frequency and laser irradiation. The first article reviews these effects and pays particular attention to developing a theoretical framework which is as similar as possible for the optical and spin cases. Subsequent articles examine deuterium relaxation in molecular solids, and the spatiotemporal growth of multiple spin coherences in networks of strongly dipolar coupled spins driven by radiofrequency fields.

A nineteenth-century guide to authentic early-American cooking that includes recipes for a variety of dishes, an introduction to the food and customs of the South, and instructions for making soap and starch, cleaning silver, drying herbs, and performing other usefull tasks.

This volume is composed of papers (invited and contributed) presented at the International Conference on Coherence and Quantum Optics held at the University of Hyderabad January 5-January 10, 1991. It has been organized by Professor Girish Agarwal and his colleagues at the School of Physics, University of Hyderabad, Hyder abad, India under partial support from the Department of Science and Technology, Government of India, International Center for Theoretical Physics, Trieste, Italy and the National Science Foundation, USA. Without the untiring efforts of Prof. Girish Agarwal and the members of his quantum office group, the Conference and the present volume would not have been possible. Some extraordinary circumstances resulted in a delay of the publication of the present volume. Our sincere apologies to all the authors. We deeply regret the inconvenience caused due to the delay. A debt of gratitude is due to Ms. Kim Bella for the excellent typing job of the different versions and the final version of the manuscript. It is a pleasure to acknowl edge the efforts of Ms. Pat Vann, Mr. Greg Safford and Mr. Eric Katz of the Plenum Publishing, without whose interest and persistence this volume would not have been possible. v CONTENTS QUANTUM OPTICS: THEORY

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 A Facsimile of an Authentic Early American Cookbook
 Optical resonance and two-level atoms
 Applied Optics and Optical Design
 An Introduction to Mathematical Taxonomy

Publisher Description

This book grew out of a 2-semester graduate course in laser physics and quantum optics. It requires a solid understanding of elementary electro magnetism as well as at least one, but preferably two, semesters of quantum mechanics. Its present form resulted from many years of teaching and research at the Max-Planck-Institut für Quantenoptik, the University of Munich, and the University of Arizona. The contents have evolved significantly over the years, due to the fact that quantum optics is a rapidly changing field. Because the amount of material that can be covered in two semesters is finite, a number of topics had to be left out or shortened when new material was added. Important omissions include the manipulation of atomic trajectories by light, superradiance, and descriptions of experiments. Rather than treating any given topic in great depth, this book aims to give a broad coverage of the basic elements that we consider necessary to carry out research in quantum optics. We have attempted to present a variety of theoretical tools, so that after completion of the course students should be able to understand specialized research literature and to produce original research of their own. In doing so, we have always sacrificed rigor to physical insight and have used the concept of "simplest nontrivial example" to illustrate techniques or results that can be generalized to more complicated situations.

This text for graduate students discusses the mathematical foundations of statistical inference for building three-dimensional models from image and sensor data that contain noise—a task involving autonomous robots guided by video cameras and sensors. The text employs a theoretical accuracy for the optimization procedure, which maximizes the reliability of estimations based on noise data. The numerous mathematical prerequisites for developing the theories are explained systematically in separate chapters. These methods range from linear algebra, optimization, and geometry to a detailed statistical theory of geometric patterns, fitting estimates, and model selection. In addition, examples drawn from both synthetic and real data demonstrate the insufficiencies of conventional procedures and the improvements in accuracy that result from the use of optimal methods.

Based on lectures to advanced undergraduate and first-year graduate students, this is a thorough, sophisticated, and modern treatment of elementary algebraic topology, essentially from a homotopy theoretic viewpoint. Author C.R.F. Maunder provides examples and exercises; and notes and references at the end of each chapter trace the historical development of the subject.

Understanding Thermodynamics

Quantitative Zoology

Light Scattering by Small Particles

The famous mathematician addresses both pure and applied branches of mathematics in a book equally essential as a text, reference, or a brilliant mathematical exercise. "Superb." — Mathematical Review. 1971 edition.

An in-depth and wide-ranging introduction to the field of quantum optics.