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KEY=PUBLICATIONS - CLARA ANIYAH

INTRODUCTION TO MODERN OPTICS

[Courier Corporation](#) **A complete basic undergraduate course in modern optics for students in physics, technology, and engineering. The first half deals with classical physical optics; the second, quantum nature of light. Solutions.**

INTRODUCTION TO MODERN OPTICS

[Courier Corporation](#) **This incisive text provides a basic undergraduate-level course in modern optics for students in physics, technology and engineering. The first half of the book deals with classical physical optics; the second principally with the quantum nature of light. Chapters 1 and 2 treat the propagation of light waves, including the concepts of phase and group velocities, and the vectorial nature of light. Chapter 3 applies the concepts of partial coherence and coherence length to the study of interference, and Chapter 4 takes up multiple-beam interference and includes Fabry-Perot interferometry and multilayer-film theory. Diffraction and holography are the subjects of Chapter 5, and the propagation of light in material media (including crystal and nonlinear optics) are central to Chapter 6. Chapters 7 and 8 introduce the quantum theory of light and elementary optical spectra, and Chapter 9 explores the theory of light amplification and lasers. Chapter 10 briefly outlines ray optics in order to introduce students to the matrix method for treating optical systems and to apply the ray matrix to the study of laser resonators. Many applications of the laser to the study of optics are integrated throughout the text. The author assumes students have had an intermediate course in electricity and magnetism and some advanced mathematics beyond calculus. For classroom use, a list of problems is included at the end of each chapter, with selected answers at the end of the book.**

INTRODUCTION TO MODERN OPTICS

A complete basic undergraduate-level course in modern optics for students in physics, technology, and engineering, dealing with classical physical optics as well as the quantum nature of light.

EOU INTRODUCTION TO MODERN OPTICS

INTRODUCTION TO STATISTICAL OPTICS

[Courier Corporation](#) **Authoritative introduction covers the role of Green's function in mathematical physics, essential differences between spatial and time filters, fundamental relations of paraxial optics, and effects of aberration terms on image formation. "An excellent book; well-organized, and well-written." — Journal of the Optical Society of America. 80 illustrations. 1963 edition.**

APPLIED NONLINEAR OPTICS

[Courier Corporation](#) **Directed toward physicists and engineers interested in the device applications enabled by nonlinear optics, this text is suitable for advanced undergraduates and graduate students. Its content is presented entirely on a classical basis and requires only an elementary knowledge of quantum mechanics. The authors demonstrate how real laboratory situations can diverge from ideal theory, acquainting readers with the kinds of problems common to construction of a nonlinear device. They also offer a detailed discussion of the practical problems and characteristics of nonlinear materials, as well as the selection procedures necessary to ensure the use of good material. Their treatment begins with an introduction to the theories of linear and nonlinear optics, along with the basic ideas behind them. Succeeding chapters explore phase matching and nonlinear materials, followed by detailed treatments of second-harmonic generation, parametric up-conversion, and optical parametric amplification and oscillation. Appendixes offer a comprehensive list of materials and their properties; the text concludes with references and an index.**

FUNDAMENTALS OF QUANTUM OPTICS

[Courier Corporation](#) **This graduate-level text surveys the fundamentals of quantum optics, including the quantum theory of partial coherence and the nature of the relations between classical and quantum theories of coherence. 1968 edition.**

APPLIED OPTICS AND OPTICAL DESIGN, PART TWO

[Courier Corporation](#) **Classic detailed treatment for practical designer. Fundamental concepts, systematic study and design of all types of optical systems. Reader can then design simpler optical systems without aid. Part Two of Two.**

AN INTRODUCTION TO THEORY AND APPLICATIONS OF QUANTUM MECHANICS

[Courier Corporation](#) **Based on a Cal Tech course, this is an outstanding introduction to formal quantum mechanics for advanced undergraduates in applied physics. The treatment's exploration of a wide range of topics culminates in two eminently practical subjects, the semiconductor transistor and the laser. Each chapter concludes with a set of problems. 1982 edition.**

OPTICS AND OPTICAL INSTRUMENTS

AN INTRODUCTION

[Courier Corporation](#) **Practical guide shows how to set up working models of telescopes, microscopes, photographic lenses and projecting systems; how to conduct experiments for determining accuracy, resolving power, more. 234 diagrams.**

PRINCIPLES OF OPTICS

ELECTROMAGNETIC THEORY OF PROPAGATION, INTERFERENCE AND DIFFRACTION OF LIGHT

[Elsevier](#) **Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light, Sixth Edition covers optical phenomenon that can be treated with Maxwell's phenomenological theory. The book is comprised of 14 chapters that discuss various topics about optics, such as geometrical theories, image forming instruments, and optics of metals and crystals. The text covers the elements of the theories of interference, interferometers, and diffraction. The book tackles several behaviors of light, including its diffraction when exposed to ultrasonic waves. The selection will be most useful to researchers whose work involves understanding the behavior of light.**

MODERN OPTICS

[Oxford University Press](#) **The most up-to-date treatment available on modern optics. The text gives an overview of the topics and an introduction to design practices for a number of applications. It provides the student with the foundations to enter into advanced courses in nonlinear optics, lens design, laser system design, and optical communications.**

OPTICAL PROPERTIES OF THIN SOLID FILMS

[Courier Corporation](#) **Authoritative reference treats the formation, structure, optical properties, and uses of thin solid films, emphasizing causes of their unusual qualities. 162 figures. 19 tables. 1955 edition.**

MATHEMATICAL PHYSICS

[Courier Corporation](#) **Useful treatment of classical mechanics, electromagnetic theory, and relativity includes explanations of function theory, vectors, matrices, dyadics, tensors, partial differential equations, other advanced mathematical techniques. Nearly 200 problems with answers.**

INTRODUCTION TO LIGHT

THE PHYSICS OF LIGHT, VISION, AND COLOR

[Courier Corporation](#) Designed for a nonmathematical undergraduate optics course addressed to art majors, this four-part treatment discusses the nature and manipulation of light, vision, and color. Questions at the end of each chapter help test comprehension of material, which is almost completely presented in a nonmathematical manner. 170 black-and-white illustrations. 1983 edition.

INTRODUCTION TO OPTICS

[Cambridge University Press](#) Introduction to Optics is now available in a re-issued edition from Cambridge University Press. Designed to offer a comprehensive and engaging introduction to intermediate and upper level undergraduate physics and engineering students, this text also allows instructors to select specialized content to suit individual curricular needs and goals. Specific features of the text, in terms of coverage beyond traditional areas, include extensive use of matrices in dealing with ray tracing, polarization, and multiple thin-film interference; three chapters devoted to lasers; a separate chapter on the optics of the eye; and individual chapters on holography, coherence, fiber optics, interferometry, Fourier optics, nonlinear optics, and Fresnel equations.

OPTICS DEMYSTIFIED

[McGraw Hill Professional](#) An enlightening guide to optics Are you in the dark when it comes to understanding the science of optics? Now there's a glimmer in the gloom! Optics Demystified brings this challenging topic into focus. Written in an easy-to-follow format, this practical guide begins by covering the nature of light, the electromagnetic spectrum, reflection, refraction, and color dispersion. You'll move on to common optical devices and effects, lasers, and optical data transmission technology. Industrial, medical, and military applications are discussed, as are exotic optics such as holography. Detailed examples and concise explanations make it easy to understand the material, and end-of-chapter quizzes and a final exam help reinforce learning. It's a no-brainer! You'll get: Explanations of the particle and wave theories Analysis of optical microscopes and telescopes Functional details of fiber optics A sampling of optical illusions A time-saving approach to performing better on an exam or at work Simple enough for a beginner but challenging enough for an advanced student, Optics Demystified illuminates this vital physics topic.

INTRODUCTION TO MATRIX METHODS IN OPTICS

[Courier Corporation](#) Clear, accessible guide requires little prior knowledge and considers just two topics: paraxial imaging and polarization. Lucid discussions of paraxial imaging properties of a centered optical system, optical resonators and laser beam propagation, matrices in polarization optics and propagation of light through crystals, much more. 60 illustrations. Appendixes. Bibliography.

CLASSICAL MECHANICS

2ND EDITION

[Courier Corporation](#) Applications not usually taught in physics courses include theory of space-charge limited currents, atmospheric drag, motion of meteoritic dust, variational principles in rocket motion, transfer functions, much more. 1960 edition.

PHYSICS OF LIGHT AND OPTICS (BLACK & WHITE)

[Lulu.com](#)

OPTICS FOR DUMMIES

[John Wiley & Sons](#) The easy way to shed light on Optics In general terms, optics is the science of light. More specifically, optics is a branch of physics that describes the behavior and properties of light—including visible, infrared, and ultraviolet—and the interaction of light with matter. Optics For Dummies gives you an approachable introduction to optical science, methods, and applications. You'll get plain-English explanations of the nature of light and optical effects; reflection, refraction, and diffraction; color dispersion; optical devices, industrial, medical, and military applications; as well as laser light fundamentals. Tracks a typical undergraduate optics course Detailed explanations of concepts and summaries of equations Valuable tips for study from college professors If you're taking an optics course for your major in physics or engineering, let Optics For Dummies shed light on the subject and help you succeed!

PRINCIPLES OF OPTICS

[Cambridge University Press](#) The 60th anniversary edition of this classic and unrivalled optics reference work includes a special foreword by Sir Peter Knight.

PHYSICAL OPTICS

CONCEPTS, OPTICAL ELEMENTS, AND TECHNIQUES

[Springer Nature](#) This textbook provides a sound foundation in physical optics by covering key concepts in a rigorous but accessible manner. Propagation of electromagnetic waves is examined from multiple perspectives, with explanation of which viewpoints and methods are best suited to different situations. After an introduction to the theory of electromagnetism, reflection, refraction, and dispersion, topics such as geometrical optics, interference, diffraction, coherence, laser beams, polarization, crystallography, and anisotropy are closely examined. Optical elements, including lenses, mirrors, prisms, classical and Fabry-Perot interferometers, resonant cavities, multilayer dielectric structures, interference and spatial filters, diffraction gratings, polarizers, and birefringent plates, are treated in depth. The coverage also encompasses such seldom-covered topics as modeling of general astigmatism via 4x4 matrices, FFT-based numerical methods, and bianisotropy, with a relativistic treatment of optical activity and the Faraday and Fresnel-Fizeau effects. Finally, the history of optics is discussed.

THE THEORY OF HEAT RADIATION

UNDERSTANDING THERMODYNAMICS

[Courier Corporation](#) Clear treatment of systems and first and second laws of thermodynamics features informal language, vivid and lively examples, and fresh perspectives. Excellent supplement for undergraduate science or engineering class.

BASIC OPTICS AND OPTICAL INSTRUMENTS

REVISED EDITION

[Courier Corporation](#) Thorough coverage of theory and applications of optics examines optical glass, light, elements of mirrors, prisms and lenses, construction of instruments, maintenance and more. Extensive appendixes include glossary, symbols, formulas.

PRINCIPLES OF ELECTRODYNAMICS

[Courier Corporation](#) The 1988 Nobel Prize winner establishes the subject's mathematical background, reviews the principles of electrostatics, then introduces Einstein's special theory of relativity and applies it to topics throughout the book.

FOURIER OPTICS

AN INTRODUCTION

A GUIDE TO FEYNMAN DIAGRAMS IN THE MANY-BODY PROBLEM

SECOND EDITION

[Courier Corporation](#) Superb introduction for nonspecialists covers Feynman diagrams, quasi particles, Fermi systems at finite temperature, superconductivity, vacuum amplitude, Dyson's equation, ladder approximation, and more. "A great delight." — Physics Today. 1974 edition.

GREEN'S FUNCTIONS AND CONDENSED MATTER

[Courier Corporation](#) Presentation of the basic theoretical formulation of Green's functions, followed by specific applications: transport coefficients of a metal, Coulomb gas, Fermi liquids, electrons and phonons, superconductivity, superfluidity, and magnetism. 1984 edition.

INTRODUCTION TO LENS DESIGN

[Cambridge University Press](#) A concise introduction to lens design, including the fundamental theory, concepts, methods and tools used in the field. Covering all the essential concepts and providing suggestions for further reading at the end of each chapter, this book is an essential resource for graduate students working in optics and photonics.

ELECTROMAGNETISM

[Courier Corporation](#) A basic introduction to electromagnetism, supplying the fundamentals of electrostatics and magnetostatics, in addition to a thorough investigation of electromagnetic theory. Numerous problems and references. Calculus and differential equations required. 1947 edition.

FOURIER OPTICS

AN INTRODUCTION (SECOND EDITION)

[Courier Corporation](#) "A fine little book ... much more readable and enjoyable than any of the extant specialized texts on the subject." — American Journal of Physics. A straightforward introduction to the Fourier principles behind modern optics, this text is appropriate for advanced undergraduate and graduate students. Topics include the Fraunhofer diffraction, Fourier series and periodic structures, Fourier transforms, optical imaging and processing, image reconstruction from projections (medical imaging), and interferometry and radiation sources. Solutions. 1989 edition.

THEORETICAL PHYSICS

[Courier Corporation](#) Classic treatise covers mathematical topics needed by theoretical and experimental physicists (vector analysis, calculus of variations, etc.), followed by coverage of mechanics, electromagnetic theory, thermodynamics, quantum mechanics, and nuclear physics.

GEOMETRY AND LIGHT

THE SCIENCE OF INVISIBILITY

[Courier Corporation](#) Suitable for advanced undergraduate and graduate students of engineering, physics, and mathematics and scientific researchers of all types, this is the first authoritative text on invisibility and the science behind it. More than 100 full-color illustrations, plus exercises with solutions. 2010 edition.

LASER PHYSICS

[John Wiley & Sons](#) Although the basic principles of lasers have remained unchanged in the past 20 years, there has been a shift in the kinds of lasers generating interest. Providing a comprehensive introduction to the operating principles and applications of lasers, this second edition of the classic book on the subject reveals the latest developments and applications of lasers. Placing more emphasis on applications of lasers and on optical physics, the book's self-contained discussions will appeal to physicists, chemists, optical scientists, engineers, and advanced undergraduate students.

THE RESTLESS UNIVERSE

[Courier Corporation](#) Highly readable introduction to modern physics, written by a Nobel laureate, develops general concepts of Newtonian mechanics and thermodynamics. Additional topics include the structure of the atom and nuclear physics.

NONLINEAR OPTICS OF PHOTONIC CRYSTALS AND META-MATERIALS

[Morgan & Claypool Publishers](#) The study of dark matter, in both astrophysics and particle physics, has emerged as one of the most active and exciting topics of research in recent years. This book reviews the history behind the discovery of missing mass (or unseen mass) in the Universe, and ties this into the proposed extensions to the Standard Model of Particle Physics (such as Supersymmetry), which were being proposed within the same time frame. This book is written as an introduction to these problems at the forefront of astrophysics and particle physics, with the goal of conveying the physics of dark matter to beginning undergraduate majors in scientific fields. The book goes on to describe existing and upcoming experiments and techniques, which will be used to detect dark matter either directly or indirectly.

UNDERSTANDING LASERS

AN ENTRY-LEVEL GUIDE

[John Wiley & Sons](#) The expanded fourth edition of the book that offers an essential introduction to laser technology and the newest developments in the field. The revised and updated fourth edition of Understanding Lasers offers an essential guide and introduction that explores how lasers work, what they do, and how they are applied in the real world. The author—a Fellow of The Optical Society—reviews the key concepts of physics and optics that are essential for understanding lasers and explains how lasers operate. The book also contains information on the optical accessories used with lasers. Written in non-technical terms, the book gives an overview of the wide-variety laser types and configurations. Understanding Lasers covers fiber, solid-state, excimer, helium-neon, carbon dioxide, free-electron lasers, and more. In addition, the book also explains concepts such as the difference between laser oscillation and amplification, the importance of laser gain, and tunable lasers. The updated fourth edition highlights the most recent research and development in the field. This important resource: Includes a new chapter on fiber lasers and amplifiers Reviews new topics on physics of optical fibers and fiber lasers, disk lasers, and Ytterbium lasers Contains new sections on Laser Geometry and Implications, Diode Laser Structures, Optimal Parametric Sources, and 3D Printing and Additive Manufacturing Puts the focus on research and emerging developments in areas such as spectroscopy, slow light, laser cooling, and extremely precise measurements Contains appendices, glossary, and index that help make this book a useful reference Written for engineering and physics students, engineers, scientists, and technicians, the fourth edition of Understanding Lasers contains the basic concepts of lasers and the most recent advances in the technology.

INTRODUCTION TO ANALYSIS OF THE INFINITE

BOOK I

[Springer Science & Business Media](#) From the preface of the author: "...I have divided this work into two books; in the first of these I have confined myself to those matters concerning pure analysis. In the second book I have explained those things which must be known from geometry, since analysis is ordinarily developed in such a way that its application to geometry is shown. In the first book, since all of analysis is concerned with variable quantities and functions of such variables, I have given full treatment to functions. I have also treated the transformation of functions and functions as the sum of infinite series. In addition I have developed functions in infinite series..."
