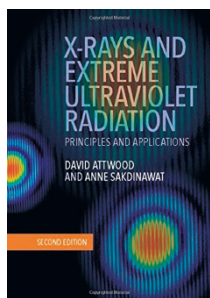


New titles at a glance

X-Rays and Extreme Ultraviolet Radiation

By David Attwood and Anne Sakdinawat
CAMBRIDGE UNIV. PRESS 652PP. £54.99

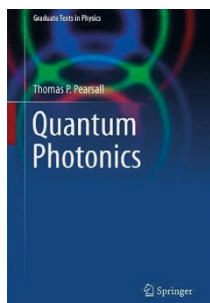


This second edition has been expanded and now includes new chapters on free-electron lasers, laser high-harmonic generation, X-ray and extreme-ultraviolet optics, and nanoscale imaging. Also included are a

completely revised chapter on spatial and temporal coherence and an extensive discussion on the development and applications of femtosecond and attosecond techniques. This book is suitable for graduate students, researchers and those working in industry interested in X-ray and extreme-ultraviolet interaction with matter. Readers will be guided step-by-step through the mathematics of each topic and will gain a detailed understanding of the physics and applications of modern X-ray and extreme-ultraviolet radiation sources.

Quantum Photonics

By Thomas P. Pearsall
SPRINGER 312PP. £57.99



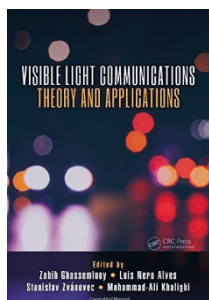
This textbook employs a pedagogical approach that facilitates access to the fundamentals of quantum photonics. It contains an introductory description of the quantum properties

of photons through the second quantization of the electromagnetic field, introducing stimulated and spontaneous emission of photons at the quantum level. Schrödinger's equation is used to describe the behaviour of electrons in a one-dimensional potential. Tunnelling through a barrier is used to introduce the concept of nonlocality of an electron at the quantum level, which is closely related to quantum confinement

tunnelling, resonant tunnelling, and the origin of energy bands in both periodic (crystalline) and aperiodic (non-crystalline) materials. It also includes an extensive treatment of the duration of tunnelling. The nonlocal nature of quantum-mechanical states is further developed by the proof of Bell's theorem and an in-depth discussion of its implications for experimental phenomena such as quantum tunnelling and quantum entanglement. Also presented is the generation of entangled photon pairs by spontaneous parametric down-conversion using operators of the quantized photonic field.

Visible Light Communications

Edited by Zabih Ghassemlooy, Luis Nero Alves, Stanislav Zvánovec and Mohammad-Ali Khalighi
CRC PRESS 568PP. £95.00



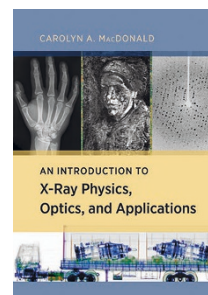
Visible light communications is an emerging topic with multiple applications including data communication, indoor localization, 5G wireless communication networks, security and small

cell optimization. Written by leading researchers, this textbook provides a comprehensive overview of theory, stimulation, design, implementation and applications. It is divided into two parts — the first is devoted to the underlying theoretical concepts of visible light communications and the second covers the applications. This book will be of interest to both beginners and experienced researchers in the field.

An Introduction to X-Ray Physics, Optics, and Applications

By Carolyn A. MacDonald
PRINCETON UNIV. PRESS 368PP. £66.95

This title provides a comprehensive introduction to the physics of a wide range of X-ray applications, optics and analysis tools. It covers common physical concepts that underpin diverse phenomena and applications of X-ray physics,

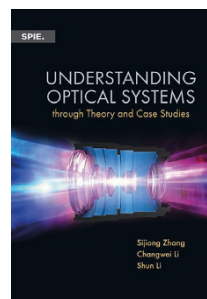


motivating further investigations into scattering, detection and noise statistics of X-rays. The second section explores topics in X-ray generation, including characteristic emission, X-ray fluorescence

analysis, bremsstrahlung emission, and synchrotron and laser sources. The third section details the main forms of interaction, including the physics of photoelectric absorption, coherent and Compton scattering, diffraction, and refractive, reflective and diffractive optics. This book is suitable for advanced undergraduate and graduate students studying physics or related sciences, as well as for researchers.

Understanding Optical Systems Through Theory and Case Studies

By Sijiong Zhang, Changwei Li and Shun Li
SPIE 294PP. US\$69.00



Through optical theories and case studies, this volume explains how to understand and analyse the working principles of optical systems. Focused mainly on the theory of classical optics, Part I provides an introduction to

geometrical and wave optics, and some concepts of quantum and statistical optics. Part II presents case studies of three practical optical systems that comprise important and commonly used optical elements, namely confocal microscopes, online co-phasing optical systems for segmented mirrors, and adaptive optics systems. By using the theoretical background gained in Part I and the case studies presented in Part II, readers can design their own novel optical systems. The book can be used as a reference for students studying optics or physics, and can also be used by scientists, engineers, or researchers working with optical systems.