

New titles at a glance

Optical Technologies for Extreme-Ultraviolet and Soft X-ray Coherent Sources

Edited by Federico Canova and Luca Poletto
SPRINGER 212PP. £117.00

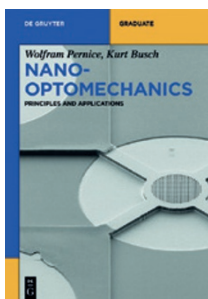


Experiments using coherent light in the X-ray regime received a lot of attention during the last decades. Strong efforts were made to realize almost fully coherent sources, both as independent sources in the femtosecond and attosecond regimes

and as seeding sources for free-electron lasers and X-ray gas lasers. In parallel to the development of sources, optical technologies for photon handling and conditioning of such coherent and intense X-ray beams advanced. This book reviews the most recent achievements in optical technologies for extreme-ultraviolet and X-ray coherent sources, with particular attention to free-electron-laser facilities, synchrotrons, high-order laser harmonics and X-ray lasers.

Nano-optomechanics

By Wolfram Pernice and Kurt Busch
DE GRUYTER 350PP. £52.99



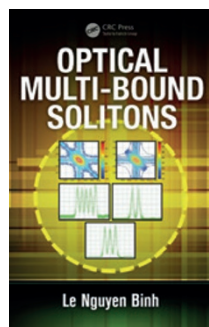
Optomechanics is a research field that investigates systems where light is coupled to mechanical degrees of freedom of micro- and nanostructures. Artificially designing such structures gives rise to applications

where sensing with extreme sensitivity is needed and in quantum information processing. On the other hand, such systems can be used as models in the examination of solid-state and open quantum systems. They can also be used to answer foundational questions in quantum mechanics. This graduate textbook gives a coherent overview of the field, including background knowledge on open quantum

systems and nanophotonics. It also provides a multifaceted overview of principles and effects arising from optical forces and cooling in such systems, including theoretical perspectives, experimental techniques, and actual implementations, as well as design, simulation and manufacturing issues.

Optical Multi-Bound Solitons

By Le Nguyen Binh
CRC PRESS 547PP. £75.65

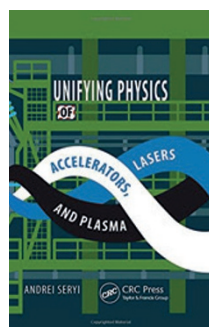


This volume describes the generation and transmission of multi-bound solitons, which have the potential to form the basis of the temporal coding of optical data packets for next-generation nonlinear optical systems. It deals

with nonlinear systems in terms of their fundamental principles, associated phenomena and signal processing applications in contemporary optical systems for communications and laser systems, touching on the mathematical representation of nonlinear equations to offer insight into the nonlinear dynamics at different phases. The text provides extensive coverage of multi-bound solitons from the dynamics of their formation to their transmission over guided optical media.

Unifying Physics of Accelerators, Lasers and Plasma

By Andrei Seryi
CRC PRESS 288PP. £57.99

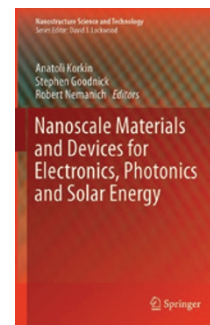


This text introduces the physics of accelerators, lasers and plasma in tandem with the industrial methodology of inventiveness, a technique that teaches that similar problems and solutions appear

again and again in seemingly dissimilar disciplines. This unique approach builds bridges and enhances connections between these three areas of physics that are essential for developing the next generation of accelerators. It is suitable for students at the senior undergraduate and graduate levels, as well as for senior scientists interested in enhancing their ability to work successfully on the development of the next generation of facilities, devices and scientific instruments manufactured from the synergy of accelerators, lasers and plasma.

Nanoscale Materials and Devices for Electronics, Photonics and Solar Energy

Edited by Anatoli Korkin, Stephen Goodnick and Robert Nemanich
SPRINGER 168PP. £90.00



Progress in information and renewable energy technologies requires miniaturization of devices and reduction of costs, energy and material consumption. The latest generation of electronic

devices is now approaching nanometre-scale dimensions. New materials are being introduced into electronics manufacturing at an unprecedented rate and alternatives to mainstream complementary metal-oxide-semiconductor (CMOS) technologies are evolving. This book presents research dedicated to solving scientific and technological problems in many areas of electronics, photonics and renewable energy. It covers topics such as atomic-scale materials design, bio- and molecular electronics, magnetic materials and spintronics, materials and processes for integrated and subwave optoelectronics, nanoCMOS, new materials for field-effect transistors and other devices, nano-optics and lasers, non-silicon materials and devices, chemical sensors and biosensors, quantum effects in devices, nanoscience, and technology applications in the development of novel solar energy devices, fuel cells and batteries.