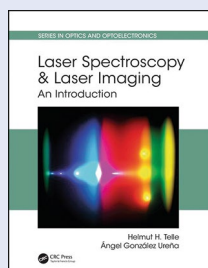


### Group Theory in Solid State Physics and Photonics

By Wolfram Hergert Matthias Geilhufe

WILEY: 2018. 377PP. £80.00.

This text aims to provide a better understanding of group theory and its applications in solid-state physics and photonics by focusing on problem solving and making extensive use of Mathematica tools to visualize the concepts. The first part of the book introduces the basics of group theory, and the second and third parts are about the applications of group theory in the electronic structure of materials and in photonics, respectively. The photonics applications are discussed in parallel to the electronics case, with the focus on photonic crystals in two and three dimensions. The Mathematica package GTPack developed by the authors is available for download from the book's homepage.

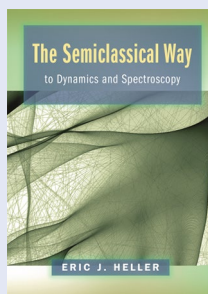


### Laser Spectroscopy & Laser Imaging

By Helmut H. Telle Ángel González Ureña

CRC PRESS: 2018. 722PP. £112.00.

Consisting of 21 chapters, this volume provides a broad overview of the basic concepts of laser spectroscopy and imaging, and focuses on their practical scientific and real-life applications. The first five chapters introduce lasers and their impact on spectroscopy and imaging, the interaction of light with matter, the basics of lasers, and light sources based on different media. Different types of spectroscopy (absorption, fluorescence, Raman, laser-induced breakdown, and multi-photon ionization spectroscopy) are described, as are imaging techniques (such as super-resolution, laser-induced fluorescence, Raman and diffuse optical imaging). Breakthroughs, advantages and disadvantages of each technique are also discussed. The examples used span physics, chemistry, environmental science, biology and medicine.

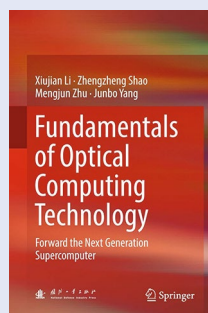


### The Semiclassical Way to Dynamics and Spectroscopy

By Eric J. Heller

PRINCETON UNIVERSITY PRESS: 2018. 472PP. £77.00.

Physical systems can be described in terms of either classical or quantum mechanics. Recently, semiclassical methods have developed rapidly, providing deep physical insight and computational tools for quantum dynamics and spectroscopy. This book builds on the concepts of classical mechanics and describes the semiclassical way and the semiclassical limit of the Feynman path integral. The applications of this approach to various kinds of spectroscopy, such as molecular spectroscopy, and electron imaging and quantum dynamical systems are also discussed, with an emphasis on the semiclassical Green function and wavepacket perspective, as well as on tunnelling. Also included are chapters on quantum mechanics of classically chaotic systems, quantum scarring and other modern dynamical topics.



### Fundamentals of Optical Computing Technology

By Xiujuan Li Zhengzheng Shao Mengjun Zhu Junbo Yang

SPRINGER: 2018. 295PP. £103.50.

Composed of seven chapters, this title introduces the principles, experimental technologies, up-to-date research findings and applications of various optical-computing technologies and devices. The chapters detail semiconductor multiple-quantum-well photoelectronic logic devices, mini-type light sources for optical computing, micro- and diffractive optical elements, optical storage, optical parallel interconnections, and optical-buffer technology and full-optical synchronization as the main technologies for optical computing. This book highlights advanced research in the fields of nanophotonics, nonlinear optics and ultrafast optics, as well as advances in data encoding, supercomputers and optical communications.

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