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Titolo	Process matters: sustainable development and domestic trade transparency / edited by Mark Halle and Robert Wolfe
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Descrizione fisica	viii, 276 p. ; 23 cm.
Altri autori (Persone)	Halle, Mark Wolfe, Robert
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Livello bibliografico	Monografia
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2. Record Nr.	UNINA9910633915303321
Autore	Davis V. T.
Titolo	Introduction to Photoelectron Angular Distributions : Theory and Applications // by V. T. Davis
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Collana	Springer Tracts in Modern Physics, , 1615-0430 ; ; 286
Disciplina	537.54 539.7
Soggetti	Optics Quantum optics Atomic structure Molecular structure Optical spectroscopy Angular momentum Light-Matter Interaction Quantum Optics Atomic and Molecular Structure and Properties Optical Spectroscopy Angular momentum of light
Lingua di pubblicazione	Inglese
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Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Angular Momentum in Quantum Mechanics -- Chapter 3. Classical Model of Photoelectron Angular Distributions -- Chapter 4. Quantum Treatment of Photoelectron Angular Distributions (Dipole Approximation) -- Chapter 5. Higher-order Multipole Terms in Photoelectron Angular Distributions -- Chapter 6. Relativistic Theory of Photoelectron Angular Distributions -- Chapter 7. Angular Momentum Transfer Theory -- Chapter 8. Molecular Photoelectron Angular Distributions -- Chapter 9. Measuring Photoelectron Angular Distributions in the Laboratory -- Chapter 10.

Sommario/riassunto

This book provides a comprehensive introduction to photoelectron angular distributions and their use in the laboratory to study light-matter interactions. Photoelectron angular distribution measurements are useful because they can shed light on atomic and molecular electronic configurations and system dynamics, as well as provide information about quantum transition amplitudes and relative phases that are not obtainable from other types of measurements. For example, recent measurements of molecular-frame photoelectron angular distributions have been used to extract photoelectron emission delays in the attosecond range which can provide ultra-sensitive maps of molecular potentials. Additionally, photoelectron angular distribution measurements are an essential tool for studying negative ions. Here, the author presents a detailed, yet easily accessible, theoretical background necessary for experimentalists performing photoelectron angular distribution measurements to better understand their results. The various physical influences on photoelectron angular distributions are revealed through analytical models with the use of angular momentum coupling algebra and spherical tensor operators. The classical and quantum treatments of photoelectron angular distributions are covered clearly and systematically, and the book includes, as well, a chapter on relativistic interactions. Furthermore, the primary methods used to measure photoelectron angular distributions in the laboratory, such as photodetachment electron spectroscopy, velocity-map imaging, and cold target recoil ion momentum spectroscopy, are described. This book features introductory material as well as new insights on the topic, such as the use of angular momentum transfer theory to understand the process of photoelectron detachment in atoms and molecules. Including key derivations, worked examples, and additional exercises for readers to try on their own, this book serves as both a critical guide for young researchers entering the field and as a useful reference for experienced practitioners.