1. Record Nr. UNINA9910877264403321 Autore Berakdar J. <1964-> Titolo Electronic correlation mapping: from finite to extended systems // Jamal Berakdar Weinheim, : Wiley-VCH, c2006 Pubbl/distr/stampa 1-281-76450-7 **ISBN** 9786611764500 3-527-61852-X 3-527-61853-8 Descrizione fisica 1 online resource (207 p.) Disciplina 530.411 Soggetti Electron configuration Electronic excitation Electronic structure Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Includes bibliographical references and index. Nota di bibliografia Nota di contenuto Electronic Correlation Mapping; Contents; 1 Qualitative and General Features of Electron-Electron Scattering: 1.1 MappingMomentumdistributionFunctions; 1.2 Role of Momentum Transfer during Electron-Electron Scattering: 1.3 Approximate Formula for the Electron-Electron Ionization Cross Section; 1.3.1 Example: AnAtomicTarget; 1.3.2 Electron-Electron Cross Section for Scattering from Condensed Matter; 1.3.3 Electron Scattering Cross Section from Ordered Materials; 1.3.4

Electron-Electron Cross Section for Scattering from Condensed Matter;
1.3.3 Electron Scattering Cross Section from Ordered Materials; 1.3.4
Initial- vs. Final-state Interactions; 1.4 Averaged Electron-Electron
Scattering Probabilities
1.4.1 Integrated Cross Section for Strongly Localized States1.4.2 Lowenergy Regime; 1.5 Electron-Electron Scattering in an Extended System;
2 Spin-effects on the Correlated Two-electron Continuum; 2.1
Generalities on the Spin-resolved Two-electron Emission; 2.2 Formal
Symmetry Analysis; 2.3 Parametrization of the Spin-resolved Cross
Sections; 2.4 Exchange-induced Spin Asymmetry; 2.5 Physical
Interpretation of the Exchange-induced Spin Asymmetry; 2.6 Spin
Asymmetry in Correlated Two-electron Emission from Surfaces; 2.7

General Properties of the Spin Asymmetry

2.7.1 Spin AsymmetryinPair Emissionfrom Bulk Matter2.7.2 Spin-polarized Homogenous Electron Gas; 2.7.3 Behavior of the Exchange-induced Spin Asymmetry in Scattering from Atomic Systems; 2.7.4 Threshold Behavior of the Spin Asymmetry; 3 Mechanisms of Correlated Electron Emission; 3.1 Exterior Complex Scaling; 3.2 The Convergent Close Coupling Method; 3.3 Analytical Models; 3.3.1 Dynamical Screening; 3.3.2 Influence of the Density of Final States; 3.4 Analysis of the Measured Angular Distributions; 3.4.1 The Intermediate Energy Regime

3.5 Characteristics of the Correlated Pair Emissionat Low Energies3.5.1 Influence of the Exchange Interaction on the Angular Pair Correlation; 3.6 Threshold Behavior of the Energy and the Angular Pair Correlation; 3.6.1 Generalities of Threshold Pair Emission; 3.6.2 Threshold Pair Emissionfroma Coulomb Potential; 3.6.3 Regularities of the Measured Pair Correlation at Low Energies; 3.6.4 Role of Final-state Interactions in Low-energy Correlated Pair Emission; 3.6.5 Interpretation of Nearthreshold Experiments; 3.7 Remarks on the Mechanisms of Electron-pair Emission from Atomic Systems

4 Electron-electron Interaction in Extended Systems4.1 Exchange and Correlation Hole; 4.2 Pair-correlation Function; 4.2.1 Effect of Exchange on the Two-particle Probability Density; 4.3 Momentum-space Pair Densityand Two-particle Spectroscopy; 4.3.1 The S Matrix Elements; 4.3.2 Transition Probabilities and Cross Sections; 4.3.3 Two-particle Emissionand the Pair-correlation Function; 5 The Electron-Electron Interaction in Large Molecules and Clusters; 5.1 Retardation and Nonlocality of the Electron-Electron Interaction in Extended Systems; 5.2 Electron Emission from Fullerenes and Clusters 5.2.1 The Spherical Jellium Model

Sommario/riassunto

An up-to-date selection of applications of correlation spectroscopy, in particular as far as the mapping of properties of correlated many-body systems is concerned. The book starts with a qualitative analysis of the outcome of the two-particle correlation spectroscopy of localized and delocalized electronic systems as they occur in atoms and solids. The second chapter addresses how spin-dependent interactions can be imaged by means of correlation spectroscopy, both in spin-polarized and extended systems. A further chapter discusses possible pathways for the production of interacting two-pa