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Charge Transfer Collisions A. L. Harris, J. L. Peacher and D. H. Madison; 1. Introduction; 2. General Theoretical Approach; 2.1. Transition Matrix and Differential Cross Section; 2.2. Two Potential Formulation; 3. Four-Body Transfer with Target Excitation (4BTTE) Model; 3.1. Single Charge Transfer without Target Excitation; 3.2. Charge Transfer with Target Excitation; 4. Four-Body Double Capture (4BDC) Model; 5. Conclusion; Acknowledgements; References

5. Distorted Wave Methodologies for Energetic Ion-Atom Collisions S. D. Kunikeev 1. Introduction; 2. Two-Body Coulomb Scattering; 2.1. Quantum-Mechanical Plane and Spherical Waves; 2.2. The WKB and Eikonal Representations; 2.3. Coulomb Scattering Amplitude; 3. Three-Body Coulomb Scattering; 3.1. Coulomb Boundary Conditions for Three Particles into Continuum; 3.2. Coulomb Boundary Conditions for Two Bound Particles and the Third Particle Into Continuum; 4. Coulomb Scattering Effects in Ionization Electron Spectra; 4.1. Plane and Spherical Wave Contributions; 4.2. Cusp Peak

5. Coulomb Scattering Effects in Autoionization Electron Spectra 5.1. Coulomb Focusing Effect; 5.2. Interference Effects between Plane and Spherical Distorted Waves; 5.3. Unitarized Post-Collision Interaction Models; 6. Effects of the Continuum Distortion in Charge Transfer; 6.1. Thomas Peak; 6.2. Plane and Spherical Wave Contributions; 7. Discussion and Conclusions; Acknowledgements; References; 6. Critical Assessment of Theoretical Methods for Li^{3+} Collisions with He at Intermediate and High Impact Energies Dz. Belkic, I. Mancev, and N. Milojevic; 1. Introduction; 2. Double Electron Capture

3. Single Electron Capture

Sommario/riassunto

The principal goal of this book is to provide state-of-the-art coverage of the non-relativistic three- and four-body theories at intermediate and high energy ion-atom and ion-molecule collisions. The focus is on the most frequently studied processes: electron capture, ionization, transfer excitation and transfer ionization. The content is suitable both for graduate students and experienced researchers. For these collisions, the literature has seen enormous renewal of activity in the development and applications of quantum-mechanical theories. This subject is of relevance in several branches of
