



Relativistic Processes in Highly Charged Ions

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Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Relativistic theory of resonance fluorescence Relativistic light shifts Higher-order recombination processes | In this book we investigate strong-field relativistic processes in highly charged ions. In the first part, we study resonance fluorescence of laser-driven highly charged ions. Our ab initio approach based on the Dirac equation allows for investigating highly relativistic ions, and, consequently, provides a sensitive means to test correlated relativistic dynamics, bound-state quantum electrodynamic phenomena and nuclear effects by applying coherent light with x-ray frequencies. Furthermore, we investigate the level structure of heavy hydrogen-like ions in laser beams. Interaction with the light field leads to dynamic shifts of the electronic energy levels, which is relevant for spectroscopic experiments. We apply a fully relativistic description of the electronic states by means of the Dirac equation. We predicted cross section for the inter-shell trielectronic recombination and quadreelectronic recombination processes which have been experimentally confirmed in electron beam ion trap measurements, mainly for C-like ions, of Ar, Fe and Kr. | Format: Paperback | Language/Sprache: english | 148 pp.



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