

<<韧致辐射基本过程>>

图书基本信息

书名：<<韧致辐射基本过程>>

13位ISBN编号：9787301219379

10位ISBN编号：7301219377

出版时间：2012-12

出版时间：北京大学出版社

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<轫致辐射基本过程>>

内容概要

<<轫致辐射基本过程>>

作者简介

作者：（德国）豪格（Haug E.） （德国）纳克尔（Nakel W.）

<<轫致辐射基本过程>>

书籍目录

Preface Chapter 1.Introduction 1.1 General introduction 1.2 Short historical note 1.3 Notations and definitions Chapter 2.Classical and semiclassical considerations on the bremsstrahlung process 2.1 Electron-nucleus bremsstrahlung 2.1.1 Screening effects 2.1.2 Bremsstrahlung linear polarization 2.1.3 Bremsstrahlung from transversely polarized electrons 2.2 Electron-electron bremsstrahlung 2.3 Weizsacker-Williams method of virtual quanta Chapter 3.Theory of the elementary process of electron-nucleus bremsstrahlung 3.1 Introduction 3.2 Bremsstrahlung cross section 3.3 Born approximation (Bethe-Heitler formula) 3.3.1 Atomic screening 3.3.2 Nuclear recoil effects 3.3.3 Effects of nuclear structure 3.4 Approximations with the Sommerfeld-Maue wave function 3.4.1 Sommerfeld-Maue wave function 3.4.2 Spin formalism 3.4.3 Cross section 3.4.4 Nonrelativistic approximation 3.4.5 The short-wavelength limit 3.4.6 Approximation for the long-wavelength limit and for high electron energies 3.4.7 Cross section in second Born approximation 3.5 Calculation using relativistic partial-wave expansions 3.5.1 Partial wave expansion 3.5.2 Calculations with a relativistic self-consistent-field potential 3.5.3 Calculation for a pure Coulomb potential 3.6 Spin-dependent cross section and bremsstrahlung asymmetry 3.7 Bremsstrahlung polarization 3.7.1 General polarization correlation 3.7.2 Linear polarization in Born approximation 3.7.3 Circular polarization from polarized electrons in Born approximation 3.8 Radiative corrections to bremsstrahlung Chapter 4.Experiments on the elementary process of electron-nucleus bremsstrahlung 4.1 Survey of experimental devices 4.2 Electron-photon coincidence experiments without regard to polarization variables 4.2.1 Angular distributions of photons for fixed directions of outgoing electrons 4.2.2 Angular distributions of electrons for fixed photon directions 4.2.3 Energy distributions for fixed electron and photon directions 4.2.4 Wide-angle bremsstrahlung experiments at very high energies 4.3 Electron-photon coincidence experiments including polarization variables 4.3.1 Linear polarization of bremsstrahlung emitted by unpolarized electrons 4.3.2 Photon emission asymmetry of bremsstrahlung from transversely polarized electrons 4.3.3 Further polarization correlations 4.4 Tagged photons Chapter 5.Theory of the elementary process of electron-electron bremsstrahlung 5.1 Introduction 5.2 Kinematics 5.2.1 Center-of-mass system 5.2.2 Laboratory system 5.3 Cross section 5.3.1 Laboratory system 5.3.2 Center-of-mass system 5.3.3 Center-of-mass system of the outgoing electrons 5.4 Bremsstrahlung in the field of bound electrons Chapter 6.Experiments on the elementary process of electron-electron bremsstrahlung 6.1 Electron-photon coincidence experiments without regard to polarization variables 6.1.1 Angular distribution of photons for fixed electron direction 6.1.2 Energy distributions 6.2 Electron-photon coincidence experiments including polarization variables 6.2.1 Linear polarization of electron-electron bremsstrahlung emitted by unpolarized electrons 6.2.2 Further polarization correlations Chapter 7.Integrated cross sections and further bremsstrahlung processes 7.1 Integrated cross sections 7.2 Positron-nucleus bremsstrahlung 7.3 Electron-positron bremsstrahlung 7.4 Two-photon bremsstrahlung 7.5 Polarization bremsstrahlung 7.6 Crystalline targets : coherent bremsstrahlung 7.7 Bremsstrahlung from heavy particles 7.8 Bremsstrahlung in nuclear decays 7.8.1 Bremsstrahlung in β decay 7.8.2 Bremsstrahlung in orbital-electron capture 7.8.3 Bremsstrahlung in a decay 7.9 Bremsstrahlung in magnetic fields 7.9.1 Electron-nucleus bremsstrahlung in strong magnetic fields 7.9.2 Synchrotron radiation (magnetobremsstrahlung) 7.10 Stimulated bremsstrahlung Conclusion Appendix A Problems Appendix B Squared matrix element of electron-electron bremsstrahlung Bibliography Index

<<轫致辐射基本过程>>

章节摘录

版权页：插图：4.3.3 Further polarization correlations Apart from the correlations considered above where in each case only one polarization variable is involved, there are also correlations between the polarizations of the collision partners. We mention some examples, although for none of them the elementary process was measured so far. A correlation that is well known is the production of circularly polarized bremsstrahlung by longitudinally polarized electrons (see Sec.3.7.3). The process has been frequently used in parity non-conservation experiments for measuring the polarization of π particles [79]. A circular bremsstrahlung component, though with lower degree of polarization, is also produced by transversely polarized electrons (see Sec.3.7.3). Following Olsen [65], it is interesting to note that the time reversal argument shows that to the lowest order in the interaction for any process only correlations between an even number of polarizations are present. So in lowest order approximation unpolarized electrons do not produce circularly polarized bremsstrahlung unless the polarization of the final state electron is recorded in coincidence. For a complete scattering experiment (cf. Sec.4.3) the emitted photons are expected to be completely elliptically polarized.

4.4 Tagged photons : The application of the coincidence technique in producing quasi-monochromatic photon beams In several fields of physics, such as atomic or nuclear physics, quasi-monochromatic photon beams are required. In the tagged photon method, the outgoing electron from the bremsstrahlung process is detected in coincidence with a particle produced by the photon-induced process to be studied, e.g., a nuclear-decay product following a photon-induced reaction. Figure 4.19 shows a schematic diagram of the tagged photon method. An electron beam of known energy E_0 strikes a radiator (thin metallic target or a monocrystal) generating a stream of bremsstrahlung photons. The outgoing electrons are momentum analyzed in the field of a magnetic spectrometer and correlated in time with some subsequent reaction product of the bremsstrahlung photons.

<<韧致辐射基本过程>>

编辑推荐

<<韧致辐射基本过程>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介, 请支持正版图书。

更多资源请访问:<http://www.tushu007.com>