

# Atomic Collisions: Electron And Photon Projectiles

## Earl Wadsworth McDaniel

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Catalog Record: Atomic collisions : heavy particle projectiles Hathi . Atomic Collisions: Earl W. McDaniel: 9780471853077: Amazon.com calculated values of BrS intensities generated in electron-atom collisions (see e.g. Pratt et al., 1977, 1981). 2 the photon energy is taken from the projectile's. Section of Atomic Collisions - Atomki In such collisions, especially when few-electron or even bare projectile ions are . When an atom absorbs completely the energy of a photon and one of its ?Theory of (laser-assisted) ion-atom collisions - Pfeifer group - - MPI . Projectile-electron excitation and loss in fast ion-atom collisions. scattering of a high-frequency photon by an atom in the presence of a strong laser field. Springer Handbook of Atomic, Molecular, and Optical Physics - Google Books Result Dealing mainly with collisions of electrons and photons with heavy particles, Atomic Collisions discusses electron-electron and photon-electron collisions. 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McDaniel Processes are split into two categories: collisions (electron and heavy particle . scattering whatever is the projectile (electron, photon, atom, ion or molecule). Download PDF (158 KB) - Springer The Physics of Multiply and Highly Charged Ions: Volume 2: . - Google Books Result 28 May 1993 . Available in: Hardcover. This companion volume to the comprehensive Atomic Collisions: Electron and Photon Projectiles is the latest, most

If a high energy photon interacts with an electron, the interaction can be described by the Compton scattering relationship or by the 4-vector formulation of relativistic momentum. As a specific example, consider a 10 GeV photon in a head-on collision with an electron at rest. If we apply the Compton formula, with  $\hat{p} = h/p$  (deBroglie relationship) for a back-scattered photon where  $\hat{\theta} = 180^\circ$ , this relationship can be expressed in terms of the quantity  $pc$  and rearranging gives. Since  $pc \gg m_e c^2$ . Conservation of energy then tells us that the electron energy after the collision is 9.999744 Ge. Electrons can lose energy in collisions with atomic electrons, leading to excitation and ionization of the medium. At low electron energies, radiative losses are negligible. The relative importance of ionization to excitation increases rapidly with the energy of the electron. These results were obtained using the default electron and photon settings in MCNP4B. Simulations for angles between 0' and 100 include the stainless steel entrance window, while angles greater than 10' had no stainless steel window. This is consistent with the experiment. Proton n-changing collisions and electron l-changing collisions are. c RAS, MNRAS 000, 1-7. Two-photon continuum of astrophysical nebulae 3. The electron density is calculated consistently depending on the He ionization degree (H is fully ionized while He is atomic due to the low energy of the laser). If He atoms are singly ionized then the electron density would be 10% higher than nH. Our proposed test compares Case B predictions with observations of a nebula. It is possible that such processes as continuum pumping of the Lyman lines, or their escape from the cloud, would mitigate the Case B assumption and change the resulting emission.

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