

ATOMIC IONIZATION AS A SUDDEN  
PERTURBATION OF AN ELECTRON  
BY THE CHARGE OF A PROJECTILE

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S u m m a r y

It is proposed to consider the atomic ionization as a sudden perturbation of an atomic electron at the passage of a charged particle near the atom ("shake-off" approximation). The ionization process is presented as a quantum-mechanical transition of the electron from the bound atomic state to the continuum due to the perturbation acting during a very short time interval. It is described with the help of the corresponding formulas of quantum mechanics (shake-off effect formulas). A formula for the determination of the electron energy distribution in the continuum of the final state is obtained. The integral electron spectrum depending on the energy of the charged particle is calculated. It is noted that the formula used for the determination of the transition probability  $W$  for an immobile charge must be supplemented with the dependence on the velocity of the charged particle  $W \sim \nu^{-1}$ .