How to capture an electron into atomic orbit

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Abstract

In the article the capture bar of an electron into atomic orbit and mechanism for analysis of screw motion of an electron is described.

The subject of this article has appeared as a result of speculations about experimental endorsements of new physics, the professor Sergey V. Kosianenko from the Petersburg nuclear physics institute for what I to him has sincerely grateful.

On notions of official physics the electron-capture into atomic orbit of any ion is impossible on those to the reasons, which one are indicated for capture of space bodies (see chapter 21 [1]). Therefore official physics does not understand reasons of formation not only neutral atoms, but also any ions. Following the logic of orthodoxes the atom for miscellaneous reasons is capable to lose any electron, but to gain it back any more can not, therefore space should represent a mixture of naked nuclei and mobile electrons, that actually does not take place.

This article describes the mechanism of energy loss by an electron in a field of a positive charge up to zero value, then the electron-capture on a parabolic trajectory of atom realizes without problems with the subsequent quantum transition in a ground state (see chapter 13 [1]).

The potential energy of an electron in electrostatic field *Ze* in a system CGSE is peer:

$$W_p = \frac{Ze^2}{r} \qquad (1),$$

it is also universal potential energy of repulsing. Apparently, that before capture this energy should accept zero value. For «dip» of an electron on a positive proton with an end position on orbit of the Bohr (1) gives 27.2 eV. Therefore, before capture the electron should lose on radiation energy 13.6 eV, then its energy before capture will become zero, and after capture and transition in a ground state the electron will lose 13.6 eV. On this example it is possible to formulate a general principle of formation of atoms: the electron from «perpetuity», gaining energy at the expense of attraction to an ion (or positive proton, or to a «naked» nucleus of atom) loses equally as much on radiation in an ionization continuum and before capture has a zero-point energy. Further it will lose still energy applicable to the given potential of ionization to form a steady ion or neutral atom.

What mechanism of this energy loss can be found out on a model system figured on a figure 1 and to confirm experimentally on the similar plant.

Let's presume, that we have constructed electrostatic model of atom of Hydrogenium shown on a figure 1.

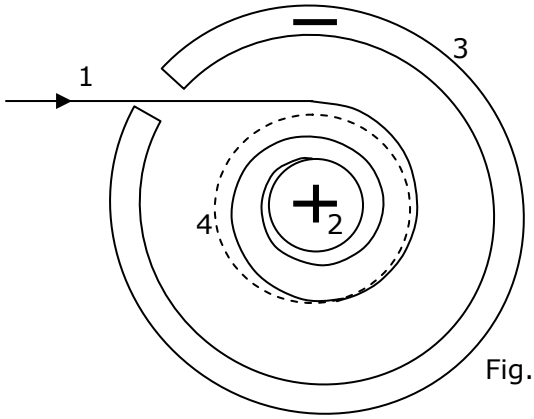

Fig. 1

On a figure 1: 1 - electron beam, 2 - central positive electrode, 3 - outside negatively charged cylindrical ring, 4 - fixed orbit, if was not of energy losses on radiation.

The actual trajectory of electrons will correspond to a solid helical line because of energy losses on radiation. These losses are not connected in any way to notions of orthodox physics about radiation of a particle driving under operating of «centripetal acceleration». They are connected that on the shown trajectory the electrons moves on a screw line and consequently beam at the expense of a Bremsstrahlung, is similar to synchrotron emission (chapter 11.5 [1]) with some features. If in model to start an electron beam dispossessed of an angular momentum $\hbar$ («superconducting», «cold»), our model will become in accuracy adequate to atom of Hydrogenium and the electrons will take fixed orbit indicated by a dotted line and at it anything to beam will not be.

For a «cold» electron on fixed orbit the attractive force to a central electrode is peer to centrifugal force of repulsing:

$$\frac{qe}{r^2} = \frac{m_e V^2}{r} \qquad (2),$$

where q - charge of an electrode. From (2):

$$r = \frac{qe}{m_e V^2} \qquad (3),$$

where: r - radius of fixed orbit.

On a figure 2 the trajectory of an electron on orbit as from above is shown. In the upper half-turn of a screw trajectory component the attractive force to a positive electrode are given to an electron with positive acceleration - radiation is not present. In the lower half-turn same component gives to an electron negative acceleration and there is a Bremsstrahlung because of which one an electron loses energy.

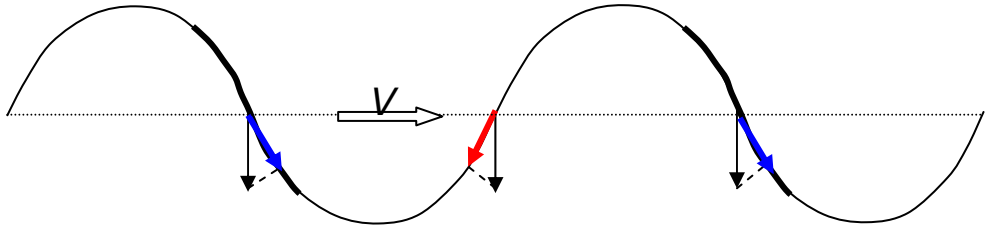

Fig. 2

Allowing equal translational and tangential velocity on a screw trajectory the braking force will be peer:

$$F_b = \frac{qe}{r^2\sqrt{2}} \qquad (4).$$

This force will provokes negative acceleration:

$$a = \frac{\sqrt{2}}{2} \cdot \frac{qe}{m_e r^2} \quad (5).$$

The intensity of a Bremsstrahlung of an electron in a Gaussian system is determined by the formula (B.M. Yavorsky, A.A. Detlaf. The reference book on physics. Moscow, «Science», 1964, page 529):

$$I = \frac{2e^2 a^2}{3c^3} \quad (6),$$

where: *c* - speed of light. By substituting (4) in (5), we shall discover:

$$I = \frac{q^2 e^4}{3c^3 m_e^2 r^4} \quad (7),$$

whence it is possible to draw a conclusion, that the emission power very much sharply is augmented in process of nearing an electron to positive electrode, and for a massive particle (for example, positive proton) it would be in 3.4 million time less.

Investigating a spectrum of continuous radiation on the shown model system at miscellaneous values of an electrostatic field between electrodes and comparing it with an ionization continuum of miscellaneous areas of space, we could identify ions of any atoms and their concentration. In earth conditions is much more lighter to conduct the similar analysis on radiation of matter in an ionized condition.

The interesting feature of the shown apparatus is, that is possible to study radiation of a separate electron. This radiation consists of separate photons on each half-turn of a screw trajectory and to this tag it is possible experimentally to confirm the set up theory of «electrostatic» radiation and at the same time motion of microparticles on a screw line.

References:

1 http://www.new-physics.narod.ru