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On quantization of electron dynamics in a stationary electromagnetic field without radiation and with radiation

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The movement of an electron in the nucleus field of a hydrogen atom consisting of one proton in a stationary orbit representing a circle is known to occur without radiation. The curvature of the orbit is determined by the action of the electric field of a practically fixed proton on a moving electron. A flat case is considered when the orbit circumference lies in a fixed plane of rotation. The trajectory of the electron is a broken line consisting of equal segments. The lengths of the segments are determined from the relation of uncertainties for the pulse and coordinates. The pulse is equal to the mass of the electron multiplied by the speed of light. It is assumed that the eoectron phase periodically transitions from state (E, t) to state (p, r). The increment of the pulse under the action of an electric field in the direction orthogonal to the electron pulse is equal to the quotient of dividing the Planck constant by the electron rest energy. Random component is excluded for simplicity. The trajectory of the electron turns into a polygon. The same approach was used to quantize the dynamics of the electron in the condenser. The radiation was simulated by turning the orthogonal pulse gain when it was rotated in a magnetic field, resulting in shortening of the electron pulse. This shortening led to the transition of part of the kinetic energy of the electron into radiation. Thus, it is shown that the given simplified quantization mechanism can be applied to electron dynamics, both without radiation and with radiation.

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