

# The Charge and Mass of a Photon

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## Abstract

The discovery of true elementary particle named **electrino**, which has a constant mass and constant positive charge and which is a material carrier of magnetic field, electric current and all kinds of emanation, was firstly practically applied at the modernization of wireless telephone. In the review V. Anpilogov writes: "The question on the influence of low intensity microwave radiation on human health still remains open for discussion for more than 50 years" [3]. Discussion on this question has been already inappropriate still it was definitely proved in the patent application "Device, which is made to put away the charged particles flux from the head of the user of mobile wireless phone". During the talk on mobile wirelessphone  $2,6 \cdot 10^{22}$  particle/sec pass through user's brain, whereas their energy is  $7,65 \cdot 10^{-19}$  Joule, and the energy of binding of molecules in protein polymers ranges at  $4,3-7,6 \cdot 10^{-19}$  Joule according to L. Poling. From that we can conclude that microwave radiation of the radiotelephone with top antenna leads to the destruction of user's brain tissue. The author of the patent application D. Baziev (#2001105456, 28.02.01. in Russia and #PCT/RU02/00054 of the international application) offers to fix the antenna on the low part of the radiotelephone and to produce radiotelephones with minimal length within 10 cm. In this case the diagram of the directional radiation pattern is on the level of the user's chin and the brain is out of the direct exposure area. This harmless of the microwave radiation could not be proved before the discovery of "electrino".

## Introduction

A systems analysis of all experimental and observation material gathered in physics, astronomy, and astrophysics from the times of Galileo let us reveal the following:

1. Experimental materials do not agree with the existing physical theory.
2. There is a certain fundamental disadvantage of the experimental material, which prevents to build a consistent theory.
3. This fundamental disadvantage consists in the absence of a charge antipode of electron, which is in the form of a true elementary particle with a positive charge and finite mass.
4. The proton and positron are not true elementary particles and neither of them can be a charge antipode of the electron because they are subjected to splitting.

5. Discovery of the second true elementary particle with a positive charge could restore the charge symmetry in physics, thus leading to a radical revision of the existing theoretical physics and resolving its current crisis state.

Searching for this particle required to ascertain physical nature of Planck's constant. This became possible only after the structure of a light beam had been understood. Namely, it was the photon sector velocity, known as Millikan constant  $\mu$ , rather than the speed of light  $c$ , that proved to be a constant, viz.:

$$\mu = \lambda_i^2 \nu_i = 119.916984 \text{ m}^2/\text{s} = \text{constant}, \quad (1)$$

where  $\lambda_i$  and  $\nu_i$  are the wavelength and frequency of the *ion* monochromatic beam in the light beam.

This new quantity elucidated the physical nature of Planck's constant:

$$\begin{aligned} h &= m_e \mu \frac{\sqrt[3]{4\pi/3}}{2} = \\ &= 6.6262681 \cdot 10^{-34} \text{ kg m}^2/\text{s} = \text{constant}, \end{aligned} \quad (2)$$

where  $m_e$  is the mass of the second (after electron) true elementary particle to be called "electrino". From this expression we have

$$\begin{aligned} m_e &= \frac{2h}{\mu \sqrt[3]{4\pi/3}} = \\ &= 6.85575729963 \cdot 10^{-36} \text{ kg} = \text{constant}. \end{aligned} \quad (3)$$

The electrino has a positive charge  $\varepsilon$  determined by

$$\begin{aligned} \varepsilon &= \frac{m_e n_e e}{m_u - n_e m_e} = \frac{-3.229526609098 \cdot 10^{-54}}{1.6578584539 \cdot 10^{-27}} = \\ &= 1.98764431671 \cdot 10^{-27} \text{ C}, \end{aligned} \quad (4)$$

where  $m_u = 1.66057 \times 10^{-27} \text{ kg}$  is the mass of an elementary atom accepted as a mass equivalent of one atomic unit;  $n_e = 3$  is the number of electrons in one elementary atom;  $e = 1.6021892 \times 10^{-19} \text{ C}$  is the charge of an electron;  $m_e = 9.038487 \times 10^{-31} \text{ kg}$  is an improved value of electron mass;  $n_e = 2.418198867 \times 10^8$  is the number of electrinos in an elementary atom.

Thus, it is obvious that Planck's constant is the angular momentum of the electrino. Moreover, it was Planck's constant that concealed the second true elementary particle, which is the charge antipode of the electron discovered by J.J. Thompson as far back as in 1897.

The solution of Planck's constant has become a basis for the synthesis of the new theory of physics [1]. This theory in particular shows that the electrino is the carrier of the magnetic field and electrical current. It is a photon of radiation of all ranges, and serves as a universal carrier of energy and information. The electrino plays the role of a neutrino in moving along the first order trajectories.

## The first experiment

An extraordinary importance and novelty of the new theory required **an experimental proof of the electrino**. For that several experiments were made in the Institute of General and Inorganic Chemistry, Moscow. The experiment was based on the following effects predicted by the theory.

1. If assume that electrino exists and that light beam is a flux of particles having positive charge and finite mass [1] we can conclude the following. At the discharge of the dc source through an incandescent lamp in which the current is converted to light and irreversibly emitted, the source weight in charged state must differ from its weight in discharged state. If we prove this difference experimentally we may say that light does consist of material particles of finite mass and a dc charge carried away by light is positive because an incandescent lamp ( $W=15\text{ Wtt}$ ) does not emit electrons, which are the carriers of negative charge.
2. The second effect to prove was that the weight of a discharging dc source is *increasing* whereas its weight when charged is *decreasing*.

To prove the validity of these predictions, several sealed containers with different dc sources inside were fabricated. The electrodes were brought out through glass insulators. The batteries were discharged through an electric lamp radiating in the visual and infrared ranges. The weight of containers was measured before and after discharge process with accuracy  $\Delta W = \pm 0,02\text{ mg}$ ; balance error was equal to  $\Delta = \pm 0,05\text{ mg}$  the standard deviation of the measurements was within  $\sigma = \pm 0,03\text{ mg}$ ; the buoyancy was calculated for each measurement of weight. In this paper, we present test results of only one container with four generally marketed GP rechargeable cells connected in series. The total battery voltage reached 5400 mV at 6000 mA/h charge capacity. The discharge was interrupted when the voltage dropped to 4000 mV, the duration of the discharge was measured accurate to one second. Two series of experiments were run: one in air, the other, under argon. Each series had ten charge-discharge cycles (Table 1 and Fig. 1). The total amount of the experiments and detailed discussion of results have been summarized in a recently published brochure [2].

The results of the above tests allow us to make the following conclusions:

1. Both galvanic and rechargeable cells during a discharge through an electric lamp show sufficient changes in their weight and charge thus proving that photons have a finite mass and a positive electric charge.
2. A new elementary particle, named electrino, derived from Planck's constant in August 1982, and published in May 1994, thus gets a complete and absolute experimental confirmation.

## The second experiment

One of the concepts of the new theory is that the speed of light in vacuum is a function of photon frequency along the beam axis, according to the proportions:

$$c_i = \sqrt{\mu v_i} \quad [\text{m/s}], \quad (5)$$

$$v_i = \mu / \lambda_i^2 \quad [\text{s}^{-1}]. \quad (6)$$

According to the new theory, for the velocity of monochromatic light (solar light or mercury-discharge lamp, but not a laser) with a wavelength of  $\lambda_r = 6.8 \times 10^{-7}\text{ m}$  (mid-point of the red spectral line), we have

$$v_r = \mu / \lambda_r^2 = 2.59336038 \cdot 10^{14} \text{ s}^{-1}, \quad (7)$$

$$c_r = \sqrt{\mu v_r} = 1.76348505882 \cdot 10^8 \text{ m/s}, \quad (8)$$

which is 58.823% of the speed  $c_v = 2.9979246 \times 10^8 \text{ m/s}$  of a violet beam with a wavelength of  $4 \times 10^{-7}\text{ m}$ .

We have to account that, according to this theory, the laser beam is not a true light beam though it is created of electrinos. The speed of laser beam is equal to the speed of beam plus the speed of current in the conductor, viz.,

$$v_0 = 2.8992629 \cdot 10^8 \text{ m/s} = \text{const} \quad (9)$$

If we select a monochromatic beam of ultra-violet light with a wavelength of  $\lambda_1 = 4 \cdot 10^{-8}\text{ m}$  then its velocity will be  $c_1 = 10\text{ C}$ :

$$c_1 = \mu / \lambda_1 = \frac{119,916984 \text{ m}^2 / \text{sec}}{4 \cdot 10^{-8} \text{ m}} = 2,9979246 \cdot 10^9 \text{ m/sec}$$

$$v_1 = \mu / \lambda_1^2 = \mu / 16 \cdot 10^{-16} \text{ m}^2 = 7,4948115 \cdot 10^{16} \text{ sec}^{-1}$$

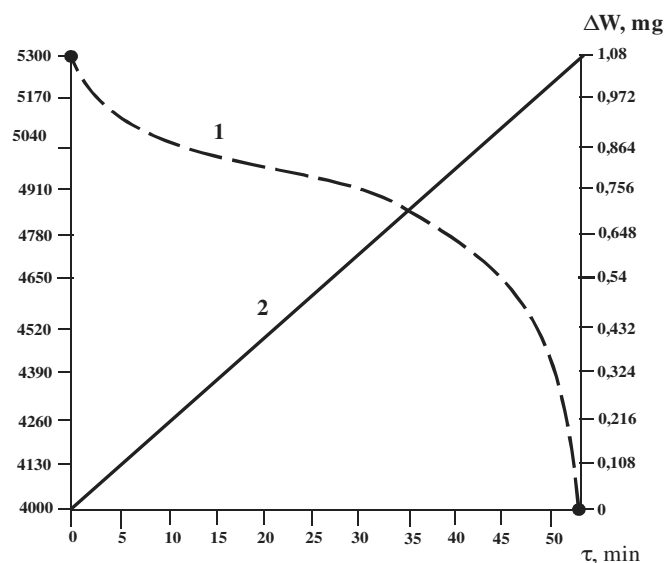


Fig. 1

Voltage drop [mV] of a battery and (2) weight increment [mg] of container #6 in an argon atmosphere during the second discharge cycle [minutes]. X-direction – is spark duration in minutes; Y-direction – is voltage of a battery; auxiliary Y-direction – is weight incensement (mg).

$$c_1 = \sqrt{\mu \cdot v_1} = \sqrt{8,987551907 \cdot 10^{18} m^2 / c^2} = 2,9979246 \cdot 10^9 m / sec$$

This experiment has been run yet, and it is offered for experimental verification with further publication of experimental results.

**Table 1**

**Weight of container #6 (under argon) in charge-discharge experiments**

Run	Measured value $W \pm \sigma$ , mg	Charged battery		Discharged battery			Charge weight $\Delta W_z = W_1 - W_0$ , mg
		Buoyancy Gmg	Real weight $W_0 = W + G$	Measured value $W \pm \sigma$ , mg	Buoyancy Gmg	Real weight $W_1 = W + G$	
1	126825.13±0,02	85.031	126910.166 ±0.02	126825.901 ±0.01	85.002	12691.903 ±0.01	0.737
2	126825.107±0.02	86.572	126911.679 ±0.02	126826.221 ±0.01	86.538	126912.759 ±0.01	1.080
3	126825.21±0.01	86.782	126911.992 ±0.01	126826.279 ±0.01	86.560	126912.839 ±0.01	0.847
4	126825.187±0.01	86.563	126911.749 ±0.01	126826.493 ±0.02	86.385	126912.878 ±0.02	1.128
5	126825.65±0,04	86.290	126911.941 ±0.04	126826.65 ±0.01	85.836	126912.941 ±0.04	0.770
6	126827.28±0.00	85.187	126912.467 ±0.00	126827.990 ±0.01	85.204	126913.194 ±0.01	0.727
7	---	---	---	---	---	---	---
8	126826.98±0.00	86.182	126913.162 ±0.00	126827.897 ±0.02	86.308	126914.205 ±0.02	1.042
9	126826.95±0.00	86.307	126913.257 ±0.00	126827.757 ±0.01	86.402	126914.159 ±0.01	0.902
10	126827.25±0.00	86.294	126913.544 ±0.00	126828.35 ±0.00	85.729	126914.079 ±0.00	0.535

## References

1. D.K. Basiev, Osnovy obyedinyonnoy teorii fiziki (Foundations of Unified Theory of Physics), Pedagogika, Moscow, 1994
2. D.K. Basiev, Zaryad i massa fotona (The charge and mass of a photon), Pedagogika, Moscow, 2001
3. V.P. Anpilgov, "The century of quality", #3, 2001, p.60

## About the Author



When a child Dzabrail Kh. Baziev became a political exile along with all Balkarian people; in 1956 he was rehabilitated and in 1957 graduated from the secondary school with steady purpose to become an outstanding chemist. His first higher education is biological and chemical (two-profile department of Kabardino-Balkarian State University). In 1965 Baziev also completed his post-graduate study in Biological Department of Moscow State University.

At 1979 Dz.Kh. Baziev had published 25 scientific articles on ornithology and ecology, however, this period became a sudden turn in his scientific work. In order to elaborate the basis of theoretical biology, he came to the conclusion that biological process could not be described without understanding of its physical essence. On the other hand, it had become evident that there was no any solution for physical phenomenon, which is the basis of biological process.

In 1983 the scientist gave descriptions of his first fundamental discoveries. He found the solution of the physical essence of Plank's constant and pioneered the use of it in gases analysis. It was a revolutionary step in science since the synthesis of science was realized at the fundamental level for the first time.

As the result of this considerable work there was a new interdisciplinary theory of physics. The author created new thermodynamics of real gases and new electrodynamics, which differs from maxwellian one and it considers *electrino* as the carrier of magnetic field and electric current.

Dzabrail Kh. Baziev has succeeded in the systematic analysis of the vast experimental material and discovered that ***electrino*, as the true elementary particle with positive charge, is able to provide the connection of physics with biology, chemistry and other parts of the fundamental science. Thus it leads us to the radical reconsideration of all conceptions, existing in natural science.**