Microleptons

Subelectronic particles – components of an electron

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1. Introduction

In an article "*On previously unknown key fundamental physical parameters-constants: Discoveries of the Dynamic Model*" published on September 22, 2020 on the website [1] (section 13, page 12), the following is written:

«*...the size of an electron relates to the size of its constituent basic elementary particles, as the size of the Earth relates to the size of its basic particles - gravitons-nucleons (protons and neutrons). The individual inner shells of the electron with a certain discrete structure represent the inner structure of the electron; and its discrete structural elements can be several times smaller than the electron itself*».

This means, by analogy, that the size of the basic (stable) elementary particles that make up the electron, that is, subelectronic particles, is about 10^{17} times smaller in comparison with the size of the electron.

A month later, on 21.10.2020, a video of Grigory Fedorovich Savelyev's lecture "*Microleptons – microlepton fields and interactions*", recorded by Yaroslav Petrovich Starukhin ("Global Wave") [2], appeared on the Internet.

Grigory Fedorovich spoke about the content of his recently published book [3], dedicated to Professor A.F. Okhatrin (4.10.1925 - 07.01.2002), and cited facts about which I did not know until now.

I was interested in the lecture. It was about experiments with particles called microleptons, which by their parameters, properties and behavior belong to subelectronic particles, and therefore are particles of the same class, which are mentioned in the above excerpt from article [1].

Having listened to the lecture, I wanted to express my thoughts about the source of origin of microleptons and the mechanism of action of a beam of microleptons on electronic devices. This is what this article is about.

2. Discovery of microleptons

A.F. Okhatrin and V.Yu. Tatur were the first to put forward a hypothesis about the existence of a class of ultra-light stable particles – microleptons, which, being an integral part of objects, are nevertheless outside the tangible, perceived shell [4]. The main characteristics of microleptons are given [5]. In size and behavior, they belong to the class of all-pervading neutral particles - neutrinos.

G.F. Savelyev, and other pupils and colleagues of A.F. Okhatrin, managed to detect microleptons experimentally and, most importantly, to develop a method for recording fields of different nature, as well as to carry out many applied problems on the basis of this method [3].

Research by G.F. Saveliev and his colleagues showed that microleptons penetrate through protective screens of any thickness, do not interact with the electrostatic field, but interact with the field of a permanent magnet, i.e., have a magnetic moment, have dimensions, according to their estimates, of the order of $10^{-39} \div 10^{-41}$ *cm*. Microleptons easily assemble into clusters.

Apparently, the particles, which in the above excerpt from article [1] are spoken of as constituents of the electron, are the very microleptons of A.F. Okhatrin discovered experimentally by G.F. Savelyev and colleagues.

Let us note some of the well-established experimentally properties of microleptons.

First, microleptons are all-pervading particles. They freely pass through any obstacles, like neitrino.

Secondly, microleptons in a beam do not repel each other, but, on the contrary, tend to unite and have the property of forming clusters.

Thirdly, the experiment showed, and this is very important, to which I also paid special attention, that the impact of a beam of microleptons disables electronic devices.

The effect of the harmful influence of a beam of microleptons on electronic devices, making them inactive, was unexpected. As suggested, it is due to the effect of microleptons on the elements of semiconductor microelectronics, on the basis of which the devices are made. However, the mechanism of this effect has not been clarified.

Nevertheless, as reported by G.F. Savelyev [2], the discovered fact was immediately used in practice.

3. Practical use of microleptons.

Figure 1 shows a diagram of a small-sized high-gradient linear high-frequency ion accelerator based on built-in quarter-wave coaxial resonators nested one inside the other with a Q factor from 5500 to 8000 units. The device was developed, manufactured and tested in 1985 [3].

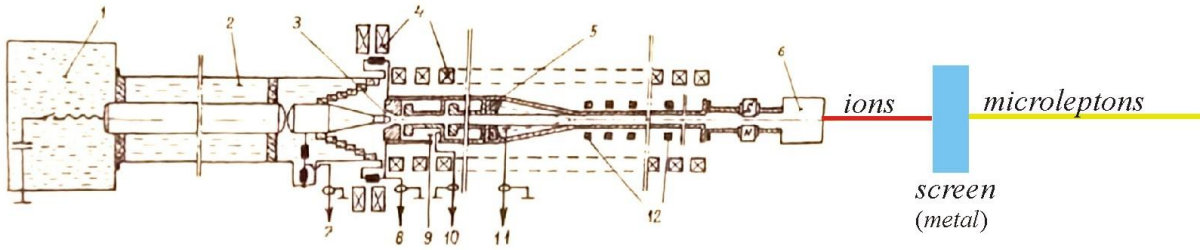

Figure 1. Diagram of a linear microwave accelerator based on built-in resonators with a thick metal plate, impenetrable for the ion beam, located in the path of the ion beam [3]:

1-Gin, 2-Coaxial line, 3-Electron gun, 4-Guiding magnetic field coil, 5-Ion injector, 6-Ion analyzer, 7-Voltage meter, 8- Diode current meter, 9-Resonator, 10-Current meter in the resonator, 11 - Electrostatic sensor, 12-magnetic corrugation coil.

The apparatus generating a bunch of microleptons (ML) was launched into near-earth orbit, as G.F. Saveliev said, and tested there on real objects – idle satellites emitting some signals, interfering with communication with active satellites. The ML beam was directed to such satellites and the generation of signals from them was stopped.

Thus, freely passing through the target satellite, through its entire dense material construction, like through empty space, the particles of the ML beam nevertheless affected the radio electronic equipment that remained active in the failed satellites, as a result, the latter stopped working. Electromagnetic noise – the generation of unnecessary signals from them – has completely stopped.

You can learn about this and other applications of the ML beam and solving other problems by listening to a lecture by G.F. Savelyev [2] or by reading his book [3].

4. The source of origin of microleptons and the reason for their impact on electronic devices

So, ions accelerated to high speeds in the accelerator acquire enormous energy. Their effect on metal screens of any thickness leads to radiation from the screen of a beam of ultra-light particles – microleptons. What is the nature of their origin? What is the source of radiation of microleptons? What is the mechanism of influence of microleptons on the work of microelectronic elements?

When considering these issues I will rely on the concepts of the structure of atoms and their constituent particles, which follow from the theories of the Wave Model – the Dynamic Model of elementary particles [6] and the Shell-Node (molecular-like) model of atoms [7].

In accordance with the Wave Model (WM), atoms are wave formations and have a shell-nodal (molecular-like) structure.

Schematically, complete wave shells of “atoms” of elements of the periodic table with the main polar-azimuthal potential nodes located in them are shown in Fig. 2 [8]. In each of the indicated nodes (marked with dark numbered circles), as a rule, there is a pair of nucleons (but not more).

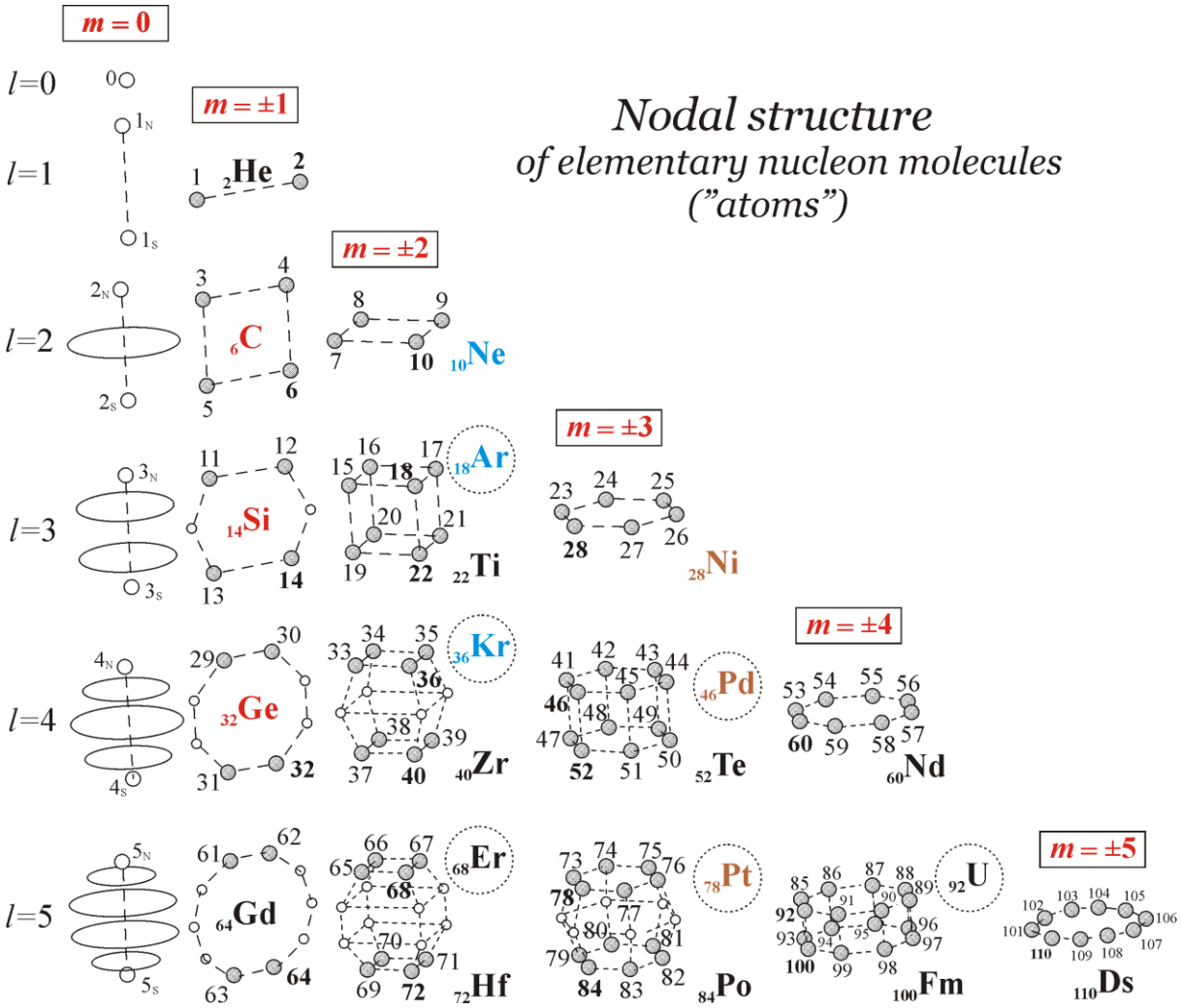

Figure 2. Particular solutions of the wave equation $\Delta\hat{\Psi} - \frac{1}{c^2}\frac{\partial^2\hat{\Psi}}{\partial t^2} = 0$ in spherical polar coordinates [8].

The figure shows the symbols of "atoms", the outer wave shells of which (the nodal structure) are fully formed, as well as the "atoms" (indicated in the dotted circles) belonging to groups $m = \pm 2 \div m = \pm 4$, the outer wave shells of which repeat the nodal structure completely formed outer wave shells of atoms of these groups of overlying rows.

I remind here only briefly of those features of the structure of atoms, due to the wave nature of their origin (in the light of the concepts of WM), which, I believe, will be quite enough to understand the mechanism of the effect of the detrimental effect of ML on semiconductors, discovered experimentally.

The main stages of research, which led to the discovery of the molecular-like structure of atoms, and other details are set forth, in particular, in [7] (available for download in PDF format on the Internet).

As seen from Fig. 2, in addition to the numbered main polar-azimuthal potential nodes filled with paired nucleons, there are collateral potential polar-azimuthal nodes, unnumbered, unfilled empty ones. They are shown in the figure as smaller white circles.

As the nodal structure of the wave shells of atoms becomes more complex, the first collateral nodes, starting with the lightest (i.e., with an increase in the atomic number), appear in the outer wave shell of the silicon atom Si (l = 3, m = ± 1), and then in the outer shell of the germanium atom Ge (l = 4, m = ± 1).

It is no coincidence, therefore, that the elements silicon and germanium turned out to be semiconductors.

The fact is that the presence of empty collateral nodes ("holes") in the outer wave shells, respectively, two for Si and four for Ge, we believe, determines the specific nature of their electrical conductivity, which distinguishes them from metals, and also determines the properties of *p-n* junctions, made from them elements of semiconductor technology.

Collateral nodes determine the semiconducting properties of some other elements, as well as various compounds, in particular such as, for example, compounds $A^{III}B^{V}$ (GaAs, BP, BN, InSb,...), $A^{II}B^{IV}C^{V}_2$ ($CdSnP_2$, $ZnGeAs_2$,…), etc. ...

A beam of ultra-light particles-microleptons of enormous density emanating from the opposite outer side of a metal target (screen) (Fig. 1), generated when the target is exposed to a beam of accelerated high-energy ions (the target is impenetrable for them and other particles), freely passes through all material objects.

Thus, microleptons freely pass through "atoms" (elementary nucleon molecules, Fig. 2), namely, through nucleons located in the nodes of "atoms" and their components, as well as through empty collateral nodes of "atoms".

Empty collateral polar-azimuthal wave nodes are potential spherical spatial volumes ("pits"). They are traps for microleptons. Part of the microleptons of the beam is captured by the potential field of empty nodes and fills them. Clutching at the nodes with each other, MLs form a cluster.

The nature of the movement of charge carriers, due largely to the presence of empty collateral nodes in the semiconductor, "holes", due to the absence of the latter as a result of their filling with microleptons, is significantly disturbed, so that the effect of one-sided conductivity of *p-n* junctions disappears. As a result, under the influence of the microlepton flow passing through them. electronic devices, built on a semiconductor element base, fail.

To prove the role of collateral nodes in the process of interaction of particle fluxes with matter, manifested in the case under consideration by the action of ultra-light particles – microleptons – on semiconductor elements of electronics, I will give the following convincing example, this time concerning the interaction of a flux of much heavier particles – neutrons – with matter, namely , with gadolinium.

The outer shell of the gadolinium atom Gd (belonging to the same group as C, Si and Ge, see Figs. 2 and 3) contains six empty collateral nodes, compared with the four main nodes filled with bound nucleons.

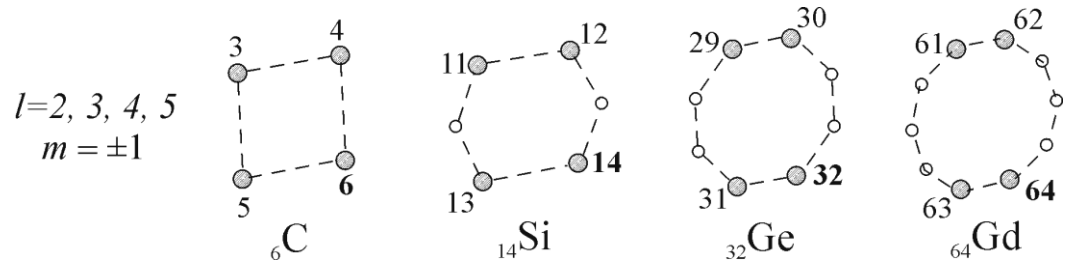

Figure 3. External quasi-like shells of elementary nucleon molecules ("atoms") of elements belonging to the 4th group of the periodic table of elements, and gadolinium belonging to the group of lanthanides. According to the Wave Model (solutions of the wave equation), all four elements mentioned above belong to the same group [9].

Gadolinium is the only element among all the elements of the periodic table that has the highest ratio of the above nodes (empty collateral to filled main) 6:4 in the outer fully formed wave shell.

It is for this reason, as we believe, that gadolinium is also characterized by the highest thermal neutron capture cross section among all elements. The huge capture cross-section allows gadolinium to be used to control nuclear chain reactions and to protect against neutrons.

Thus, the role of collateral nodes in the processes of interaction of matter with radiation (particles) of various nature is confirmed.

So, from the standpoint of the WM, the effect of the ML beam on semiconductor devices has received a consistent logical explanation.

All substances are made up of atoms. In accordance with the Wave Model, true atoms are hydrogen atoms, to which we include nucleons (protons and neutrons) as well as protium, the simplest hydrogen atom. The rest of the atoms of Mendeleev's periodic table of elements are elementary nucleon molecules, the wave shells of which with wave nodes located in them are shown in Fig. 2.

According to WM, nucleons (protons and neutrons) consist of g-nucleons (or g-quanta) - particles whose mass is equal to 68.22 electron masses, $m_g = 68.22 m_e$.

Judging by the mass, the g-nucleon is a complex electron molecule of the g-nucleon level with the serial number Z = 30-31 (if we rely on the solutions of the wave equation for the g-nucleon space). At the nucleon level, an atom with a mass number of 68 is in the periodic table in the row where $_{30}$Zn and $_{31}$Ga are located [10].

Therefore, we can assume that all elementary particles ultimately consist of electrons.

In this case, a g-nucleon is an electron molecule with its own wave shells and with nodes located in them in a certain order (similar to the wave shells of "atoms" – elementary nucleon molecules, see Fig. 2).

The intense impact of a powerful flow of ions on the metal screen leads to strong excitation of the atoms of the near-surface layer of the metal and all the particles that make up the atoms along the chain, from the heaviest inward to the ultralight.

Thus, nucleons are excited – hydrogen atoms, of which all "atoms" and, accordingly, all dense material formations are composed. At the same time, the constituents of nucleons – g-nucleons, constituents of g-nucleons – electrons, constituents of electrons – subelectronic particles are excited (to the latter, in particular, microleptons relate, predicted by A.F. Okhatrin and discovered experimentally by G.F. Saveliev and his colleagues).

The entire surrounding wave space is excited. The particles excited in the surface layer of the metal screen cannot freely pass through the entire thickness of the metal and fly out from the opposite outer side of the screen, except for the all-penetrating weakly interacting light particles-constituent electrons – subelectronic particles (microleptons).

When excited, the wave process involves [11] “a huge set of particles of the subelectronic level. They have nothing to do with mathematical points – photons of zero rest mass, $m_0 = 0$ and, accordingly, zero rest energy, $m_0c^2 = 0$.

This is a huge world of particles that belong to a level below the electronic one. For them, the Earth is in the highest degree a "rarefied" spherical space. These particles penetrate the Earth as freely as asteroids penetrate the space of the solar system and galaxies.

Just their directional movement, flows, called "magnetic field", that surround a conductor with a current, a bar magnet, our Earth and fill interplanetary, interstellar and intergalactic spaces. This is a cylindrical field-space of the subelectronic level”.

In conclusion, it is appropriate to note the following [10]. “The complexity of the structure of the Universe increases both when moving from one level to another in the hierarchy of mega-objects, and when moving downward in the hierarchy of micro-objects. This means that the “most elementary” boundary particle of the *E*-class – an electron belonging to the *G*-class of particles (classification of particles according to WM), is at the same time the most complex particle. Electrons are structural components of the world of elementary particles, including nucleons. An electron in its complexity can be compared with the Megagalaxy; therefore it should be called the Microgalaxy of the Universe”.

5. Summary and Conclusions

The Wave Model recognizes the existence of an all-embracing physical field-space of the subtle-material world along with other cosmic fields in the hierarchy of cosmic fields of different density. Such a field-space is the primary source from which all particles are formed and, therefore, all other forms of matter. It is a medium in which disturbances propagate in the form of electromagnetic and gravitational waves. This subtle-material physical field-space can be called a torsion field, ether, physical vacuum, or something else.

According to WM, elementary particles are formed as a result of compression (compaction) of local vortices of the mentioned primary all-embracing physical wave field-

space of the Universe. Therefore, being dynamic energy bunches, particles behave like pulsating spherical microformations [6].

Ultralight weakly interacting particles, discovered experimentally and called microleptons, as follows from the analysis of the materials considered here, are, in all likelihood, the very same ultra-light particles – the components of electrons, which are mentioned in article [1], an excerpt from which is given in the Introduction. Subelectronic particles are also mentioned in other works of the author [8, 10, 11].

Thus, the source of microleptons in the experiments described by G.F. Savelyev [2, 3] are atoms, dense-material formations, since, ultimately, atoms consist of subelectronic particles, microleptons, and other even smaller superlight particles of the subtle-material world.

The fatal effect of a beam of microleptons on the operation of electronic devices is quite convincingly explained within the framework of the WM concept of the shell-nodal structure of atoms. Namely, the failure of electronic devices is due to the disappearance of electrical barriers in the area of *p-n* junctions of microelectronic elements due to the capture of a part of the microleptons of the passing beam by empty collateral potential polar-azimuthal nodes of wave shells of atoms of the semiconductor.

Captured microleptons accumulate in collateral nodes, combining there into clusters, until the nodes are completely filled. As a result, the nature of the movement of charge carriers in the *p-n* junction region, the area of contact of two semiconductors with different types of conductivity, is violated to such an extent that the electrical barrier of the *p-n* junction decreases to zero. Electronic devices stop working.

That is, the initially existing electric field, generated by space charges of opposite sign at the semiconductor boundary, disappears due to the redistribution of these charges, due to structural changes in the crystal lattice of semiconductors, caused by the disappearance of empty sites when filling them with microleptons.

The role of empty collateral nodes in the interaction of various particles with matter is confirmed in all cases, in particular, in the above example with gadolinium. The $_{64}$Gd gadolinium atoms differ from all other atoms in that their outer fully formed wave shell has six collateral empty polar-azimuthal potential wave nodes, and the corresponding main filled ones are only four (Fig. 3). For this reason, gadolinium is also characterized by the highest capture cross section for thermal neutrons (heavy particles, in comparison with ultra-light subelectronic particles – microleptons) among all other elements.

The effects considered above, due to the action of microleptons and neutrons, are, as we have shown, a consequence of the shell-nodal structure of atoms. The molecular-like structure of atoms follows from the universal (classical) wave equation, its particular solutions, presented by us for the first time in a graphical form, in particular, as shown in Fig. 2.

Important consequences of the shell-nodal (molecular-like) structure of atoms and the presence of empty nodes in them – collateral potential polar-azimuthal and potential-kinetic polar ones – are also discoveries, which I think it is worth recalling in the conclusion, since they confirm the above conclusions. These are, respectively:

1) Discovery of the structure and full spectrum of isotopes of all elements of the periodic table, both already known and not yet discovered in experiments at accelerators [13, 14].

2) The discovery of the anisotropy and the hexagonal lattice of a monatomic layer of graphite – graphene (confirmed experimentally) [12].

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