# The structure of autonomous motion

# E/M waves

Michael Tzoumpas

Mechanical Electrical Engineer

National Technical University of Athens

Email: m.tzoumpas @ gmail.com

## Abstract

On a previous paper (see http://viXra.org/abs/1505.0211), the inductive-inertial $G$ phenomenon is developed, which is a precondition to create E/M waves, while the cause for the creation of E/M formations is the $\Gamma$ phenomenon, namely the rotary oscillations of the electron.

So, the creation of E/M waves is interpreted as photons at the emission and absorption in the atomic orbitals, while the Compton scattering is interpreted, as a result of the absorption inability of the high energy photons from the electron.

Also, the emission of neutrinos and antineutrinos is interpreted as independent E/M formations, which are created when a neutron breaks down into a proton and an electron (beta decay). Specifically, at the contact limits of the neutron quarks, due to the acceleration of the surface charges of the neutron cortex (see http://viXra.org/abs/1502.0097), the adjacent opposite units are accelerated strongly, causing grouping units ($G$ phenomenon) outside the neutron cortex, as an E/M wave of one spindle.

# 1. Rotary oscillations of electron spin as a cause of E/M formations

On a previous paper (see http://viXra.org/abs/1505.0211) is described the way that the forces in **motion formation** of a charged particle are accumulated, as a result of the **pressure difference** $\Delta P$, which is created by the **grouping units**. Also, these forces are accumulated on **pairs** of **vertical meridians** of motion formation as **force talantonia** $f_\tau$ and that they are released by a mechanism, which will be described below:

The **fundamental E/M wave** of frequency $\nu_\tau=10^5 Hz$, defined as the **endurance frequency** of the **dynamic space**, corresponds to a liberated force talantonion $f_\tau$. This frequency is known from **Thomson's oscillating circuit**, in which the radiation emission starts at about the indicative **limit frequency** $\nu_\tau=10^5 Hz$, corresponding to $\lambda=C/\nu_\tau=3\cdot10^3 m$, our well known **photon length** $L=\lambda=3000m$ (see previous link).

Schematically, figure 1 shows the accumulation of two talantonia ($2f_\tau$) on the accelerated electron and the emission of a talantonion ($1f_\tau$) as a fundamental E/M wave ($L=3000m$), while the other talantonion ($1f_\tau$) remains into the motion formation of the electron.

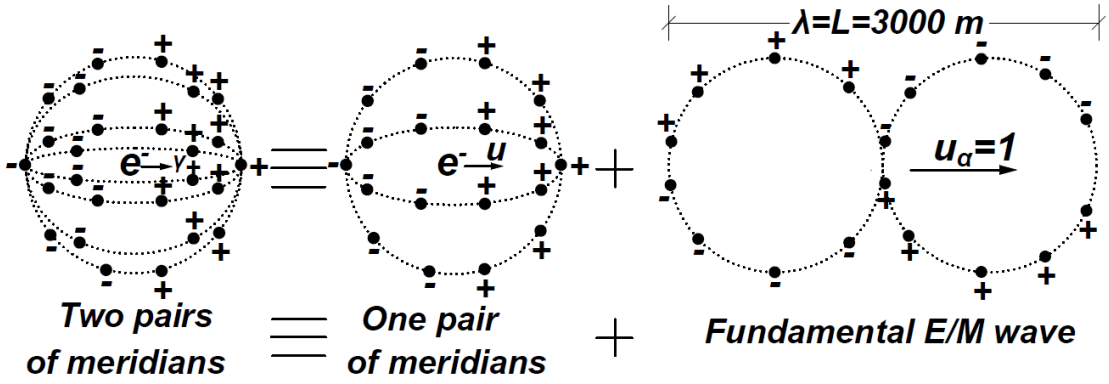


***Figure 1**: Accumulation of two talantonia ($2f_\tau$) on two pairs of meridians on an accelerated electron, emission of a talantonion ($1f_\tau$) as fundamental E/M wave, while the other talantonion ($1f_\tau$) remains into the motion formation, maintaining constant the uniform motion of the electron*

The emission of a talantonion took place, because the acceleration of the electron exceeded the **endurance limit** of the dynamic space, which constitutes the way of accumulation of forces on the motion formation of the charged particle. Therefore, by changing the kinetics of the charged particle the forces talantonia are accumulated as a result of the $G$ phenomenon and for a most strong change, an emission of half quantity of accumulated talantonia happens.

The **release mechanism** of the above talantonia from the particle formation is the $\Gamma$ **phenomenon**. On another previous paper (see http://viXra.org/abs/1502.0097) is described the **spin** of the **particles**, due to the differentiation of the surface charges, which change the

**cohesive pressure** $P_0$ (see http://viXra.org/abs/1410.0040), creating at the periphery of the particle a pressure difference $\Delta P$, that is the cause of its **rotary motion**. However, when an electron is located at a strong electric field, the change of the cohesive pressure close to the electron affects the $\Delta P$ of the electron spin and imposes reverse rotary oscillations of spin by $-1$, namely from $+1/2$ to $-1/2$ and vice versa. The frequency of these rotary oscillations depends, of course, on the intensity of the electric field that accelerates the electron. This mechanism is called $\Gamma$ phenomenon. Note that, the values of the particles spin ($s=+1/2$ and $s=-1/2$), will be calculated at a next paper.

The **rotary oscillations** of the **electron**, the $\Gamma$ phenomenon, happen above the indicative limit frequency of $v_\tau=10^5 Hz$, at which **E/M radiation** can be emitted. This limit of rotary oscillations of the electron is the cause of forming a half talantonion from motion meridian (see http://viXra.org/abs/1507.0079) to a **fundamental E/M formation** within the quantum time $\tau=10^{-5} sec$, corresponding to the above endurance frequency $v_\tau$ of the dynamic space. The photon frequency $v_n$ with a number $n$ talantonia-fundamental E/M waves is $v_n=C_0/\lambda$, where $\lambda=L/n$ the corresponding wavelength of the photon with a length $L$, which is formed in a helix length $\pi L=\pi \cdot 3000m$ (see http://viXra.org/abs/1505.0211). So, the photon frequency $v_n=nC_0/L$, due to the frequency $v_\tau= C_0/L$ of the fundamental E/M wave, becomes $v_n=nv_\tau$, namely the photon frequency $v_n$ is a multiple of the endurance frequency $v_\tau=10^5 Hz$ of the dynamic space. Here, we note the difference from **Maxwell's Theory**, which interprets the E/M waves as a change of the kinetics of the electric charge, while **Gosdas's Theory of Dynamic Space** interprets them as the rotary oscillations of charged particles.

The change of the electron spin (rotary oscillation) from $s=+1/2$ to $s=0$ (*Figure 2*) is caused by the **angular deceleration** $a$ of the surface negative charges of the electron, whereby the inductive forces ($F_{G+}$ and $F_{G-}$) are exercised to the first grouping units, according to the $G$ phenomenon, resulting in the compression of positive and negative units downwards.

Subsequently, the change of the electron spin from $s=0$ to $s=-1/2$ is caused by the **angular acceleration** $a$ of the surface negative charges of the electron and the inductive forces ($F_{G+}$ and $F_{G-}$) compress furthermore downwards the first grouping units, creating the motion arrow $\Delta P$ upwards and vertically to the motion direction.

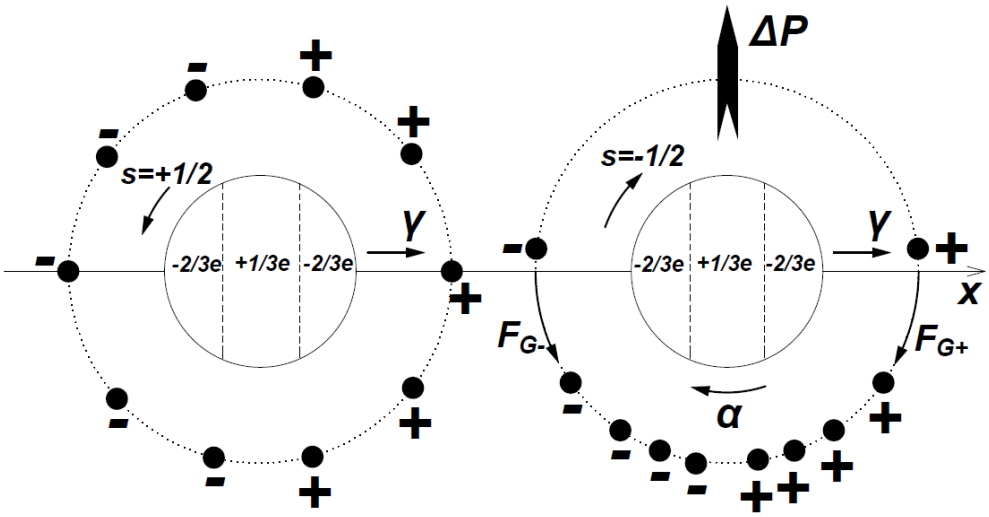


***Figure 2**: Reversion of the electron spin (s=+1/2 to s=-1/2), accumulation of the grouping units downwards and development of the motion arrow ΔP upwards*

However, under the influence of the electron motion, this arrow and the whole meridian turns by $\pi/2$ (*Figure 3*) and becomes parallel to the direction of the electron motion (principle of momentum conservation). The above meridian exits as a first E/M formation, which contains a half force talantonion ($f_\tau/2$).

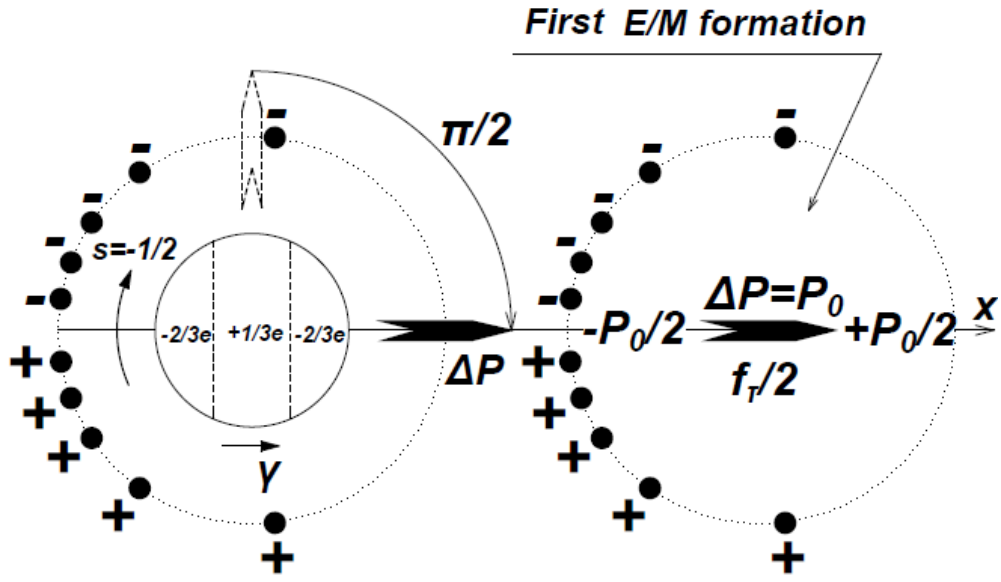


***Figure 3**: Turning of the motion arrow ΔP by π/2 and of the whole meridian and its exit as a first E/M formation*

The same procedure is repeated during the change of the spin from *s=-1/2* to *s=+1/2*, followed by the compressing upwards of the positive and negative units of the meridian (*G* phenomenon), resulting in the motion arrow *ΔP*, downwards now (*Figure 4*), whereby it

follows its rotation by $\pi/2$ and the exit of this meridian as a second E/M formation (*Figure 5*) of half force talantonion ($f_\tau/2$).

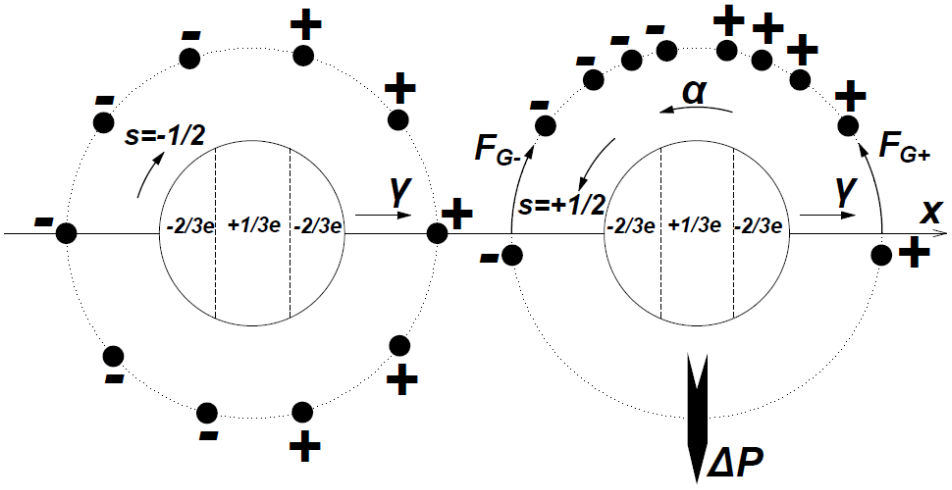


***Figure 4**: Reversion of electron spin (s=-1/2 to s=+1/2), accumulation of the grouping units upwards and development of the motion arrow ΔP downwards*

Therefore, the reversion of the electron spin creates an inverted E/M formation.

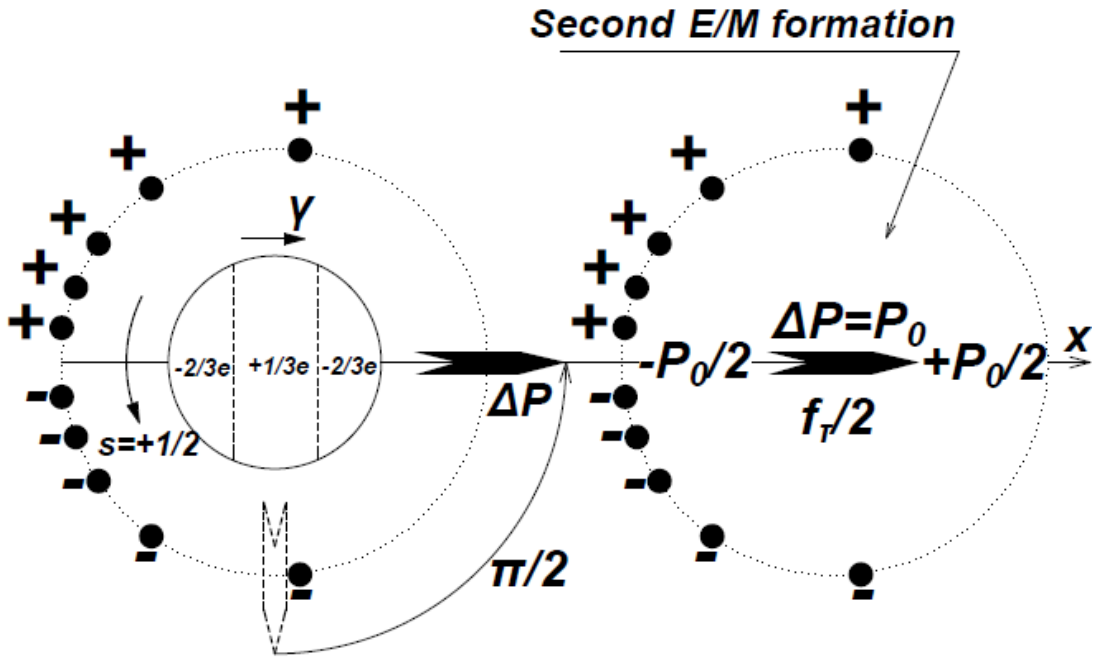


***Figure 5**: Turning of the motion arrow ΔP by π/2 and of the whole meridian and its exit as a second E/M formation*

These two E/M formations of figures 3 and 5, each one of half talantonion, compose the fundamental E/M wave (*Figure 6*) of a talantonion for the limit frequency $\nu_\tau=10^5 Hz$ of the rotary electron oscillations. Thus, the fundamental E/M wave has a frequency $\nu=\nu_\tau=10^5 Hz$ and a wavelength $\lambda$, which coincides with the photon length $L$, that is $\lambda=L=3000m$.

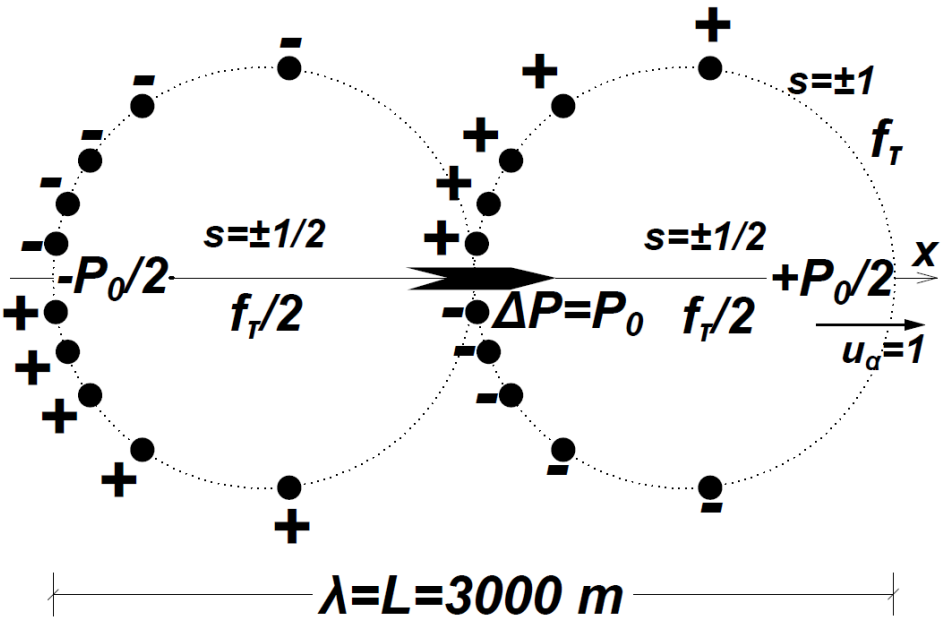


***Figure 6**: The two E/M formations of figures 3 and 5 compose the fundamental E/M wave with a spin $s=+1/2+1/2=+1$ or $s=-1/2-1/2=-1$ and an accumulated force of one talantonion ($f_\tau=f_\tau/2+f_\tau/2$) and a wavelength $\lambda=L=3000m$*

It is obvious that, in any rotary oscillation of the electron there correspond two opposite reversions of the spin ($+1/2-1=-1/2$ and $-1/2+1=+1/2$) and, therefore, two opposite E/M formations correspond to a fundamental E/M wave. Here, the **principle** of **antithesis** (opposition) applies, according to which all natural phenomena are structured. It is concluded, therefore, that the fundamental E/M wave consists of two E/M formations with **opposite spindles** of diameter $\lambda/2$, that are released from two vertical meridians of the electron and move at the light speed $C_0$, the **timeless light speed** $u_\alpha=1$.

On paper http://viXra.org/abs/1505.0211, it is described that the pressure difference $\Delta P=(\Delta P+P_0/2)-(\Delta P-P_0/2) \Rightarrow \Delta P=P_0$ causes in front of and behind the E/M wave the timeless light speed $u_\alpha=1$ ($u_\alpha=u/C_0$, where $u=C_0 \Rightarrow u_\alpha=1$), which is

$$u_\alpha=\sqrt{\frac{\Delta P}{P_o}}$$

and for $u_\alpha=1 \Rightarrow \Delta P=P_0$ (see http://viXra.org/abs/1507.0079).

Also, it is noted that the timeless speed $u_\alpha$ has been found

$$u_\alpha=\frac{F_s}{F_\tau}=\frac{F_s}{\sqrt{F_o^2+F_s^2}}$$

where $F_0$ is the **gravity force** of the particle that does not accompany the E/M wave, so $F_0=0$, hence $u_\alpha=F_s/F_s=1 \Rightarrow u_\alpha=1$. Therefore, the E/M wave actually moves at the **light speed**, which is reached by using the whole chaotic cohesive pressure of space, as a pressure difference $\Delta P=P_0\approx 10^{151} N/m^2$ (see http://viXra.org/abs/1410.0040) in front of and behind the E/M wave.

# 2. Photons and independent E/M waves

On a previous paper (see http://viXra.org/abs/1505.0211), the constant length $L=3000m$ or $L\cong10^{58}L_0$ of the photon and the constant length of its helix $\pi L=\pi3000m$ or $\pi L_0 10^{58}$ are determined, where $L_0\cong10^{-54}m$ (see http://viXra.org/abs/1410.0040) the **length** of the **electric dipole**. In the helix, one or more force talantonia $f_\tau\cong10^{26}N$ are accumulated. The force talantonia $f_\tau$, which are accumulated in the constant length of **photon helix**, determines the wavelength, the number of the fundamental E/M waves and the frequency of the photon (see paragraph 1). Therefore, all fundamental E/M waves, which are derived from the motion meridians of the electron and have a **constant photon length** $L$, are the **autonomous motion** of E/M waves, the photon. The fundamental E/M waves (*Figure 6*), which constitute the photon, have interchangeable spin $(+1, -1)$. Depending on the number of the fundamental E/M waves (even or odd), the photon spin becomes $s=0$ or $\pm1$. **Quantum Mechanics** does not explain the zero value ($s=0$) so far.

Another form of E/M waves, the so-called independent E/M waves, is created during the electron oscillations at an **emission antenna**. These waves do not constitute the constant photon length $L=3000m$, in contradiction to the fundamental E/M waves of photon.

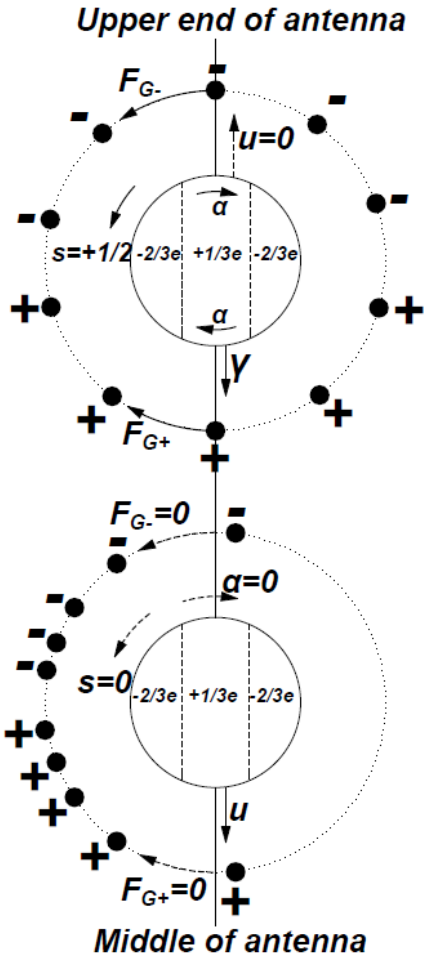


***Figure 7**: The electron spin $s=+1/2$ tends to zero ($s=0$) from the upper end to the middle of the emission antenna with result an accumulation of grouping units to the left*

At the upper end of the emission antenna (*figure 7*), where the electron, while executing **linear oscillations**, has zero linear speed, a maximum downwards linear acceleration $\gamma$ is created and some force talantonia appear on the pairs of meridians. This change of the electron kinetics affects the pressure difference $\Delta P$ of the electron spin and therefore the rotary oscillation of the electron begins ($\Gamma$ phenomenon) and at the same time the electron spin tends to zero (from $s=+1/2$ to $s=0$) at the middle of the antenna, under the influence of the angular deceleration $a$. Due to the negative charges of the electron, the inductive forces $F_{G+}$ and $F_{G-}$ are developed ($G$ phenomenon), which shift the grouping units to the left (*figure 7*) of the meridian that is vertical to the electron spin.

At the middle of the antenna, the electron acquires its maximum speed $u$ and the spin becomes $s=0$. Lower to the medium of the antenna, the electron is decelerated, reducing the accumulation of force talantonia on electron meridians.

At the lower end of the antenna, the linear speed of the electron becomes zero under the influence of the maximum linear deceleration $\gamma$. The continuing rotary oscillation of the electron ($\Gamma$ phenomenon) alters the electron spin from $s=0$ at the middle of the antenna to $s=-1/2$ at its lower end, under the influence now of the angular acceleration $a$, resulting the further compression of the grouping units to the left (*figure 8*), due to the presence of the forces $F_{G+}$ and $F_{G-}$ ($G$ phenomenon).

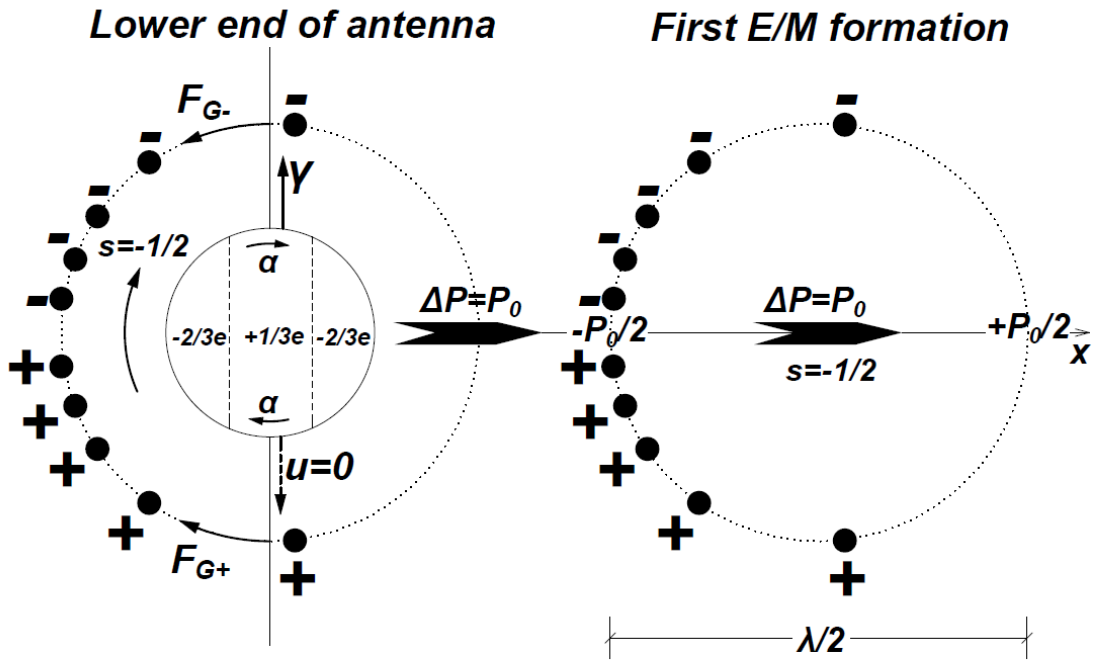


***Figure 8**: Reversion of the electron spin (s=-1/2), further accumulation of grouping units to the left, creation of a motion arrow $\Delta P$ and exit of the meridian as a first E/M formation*

The E/M formation, now, has developed the whole pressure difference $\Delta P=P_0$, vertical to the direction of oscillation and, due to zero speed of the electron at the lower end, the exit of the first E/M formation begins to the direction of arrow $\Delta P$.

The opposite happens during the upwards motion of the electron, from the lower to the upper end of the antenna, since, by the rotary oscillation ($\Gamma$ phenomenon), the spin becomes first *s=0* and then *s=+1/2* from *s=-1/2*. Subsequently, the forces $F_{G+}$ and $F_{G-}$ ($G$ phenomenon) compress the units of the meridian that is vertical to the electron spin to the left, creating the second E/M formation with opposite, to the first E/M formation, charges (indicatively see figures 7 and 8).

So, with the exit of the second E/M formation, vertical to the direction of oscillation, the E/M wave of two spindles with alternating charges of units is completed (*figure 9*).

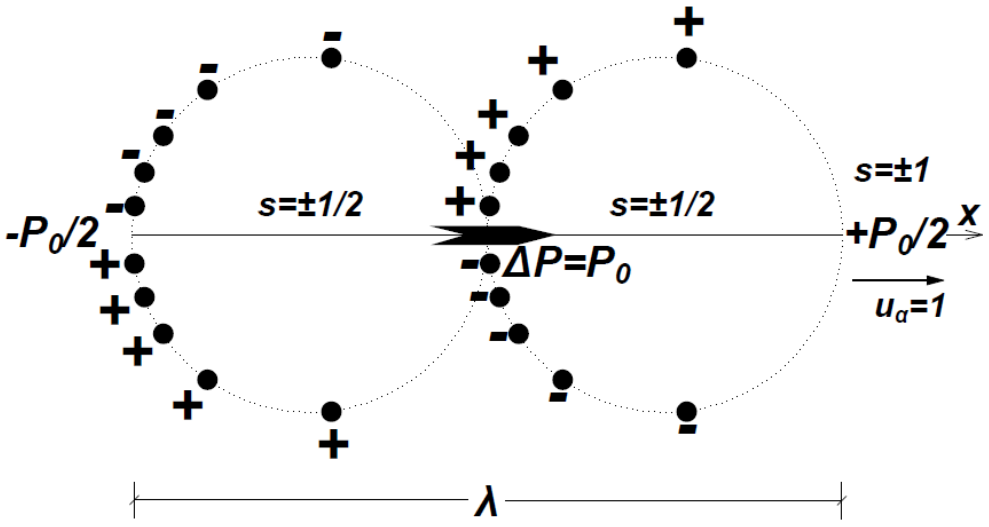


***Figure 9**: The first (figure 8) and the second (as is described) E/M formation completes the E/M wave vertical to the emission antenna with a spin s=+1/2+1/2=+1 or s=-1/2-1/2=-1*

Of course, from the number of meridians, which are placed as force talantonia, only those, who are close to the vertical, to the electron spin, level are formed by the forces $F_{G+}$ and $F_{G-}$ ($G$ phenomenon). After the exit of these meridians as E/M formations, more motion meridians follow, which occupy the positions close to the vertical, to the electron spin, level.

Therefore, the number of meridians that are formed as E/M formations, is very small, depending on the accumulated force. Hence, in every electron oscillation the radiation energy is very small, while the remaining energy returns to the field caused by the electron oscillation, in-phase with every electron deceleration.

These independent E/M waves may be continuous or non continuous with empty intervals that are multiples of wavelength $\lambda$, which are in-phase with the electron oscillation. Therefore, the electron oscillation creates independent E/M waves with a wavelength corresponding to the oscillation frequency of the electron.

This radiation form of independent E/M waves, with in-phase allocation along the space, as a result of the electron oscillations, differs from the photonics form of the accelerated or decelerated linear motion of the electron.

# 3. Absorption of independent E/M waves

The **absorption** of the **independent E/M waves** takes place reversely to their creation. When an electron of the receiver antenna is found in the first E/M formation (*figure 10*) of the E/M wave, the pressure difference $\Delta P$ of the electron spin ($s=+1/2$) is affected by the motion arrow $\Delta P=P_0$ of E/M formation and is altered, thus reversing the electron spin ($s=-1/2$).

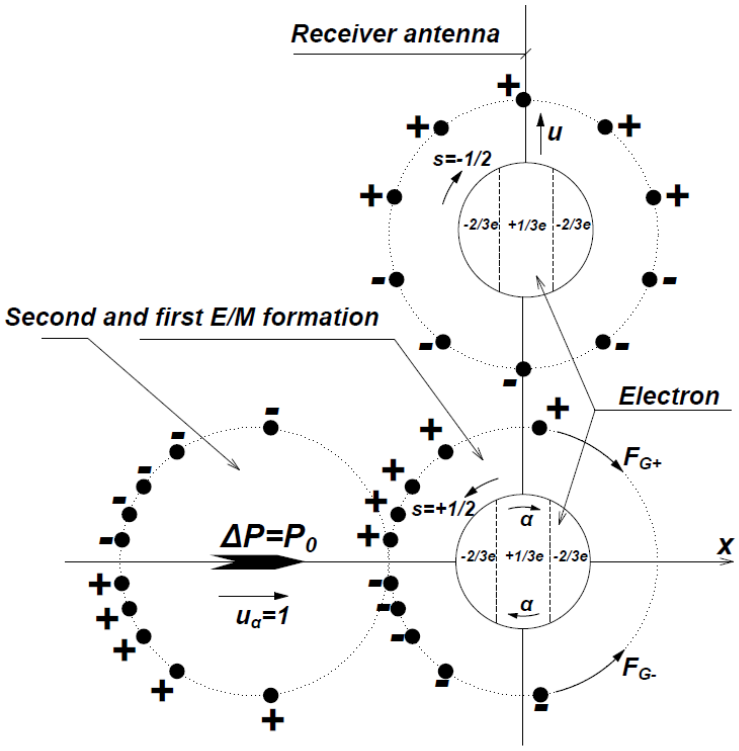


***Figure 10**: Absorption of the first E/M formation by the electron with creation of its motion meridian*

This reversion of the electron spin decelerates initially and then accelerates the negative charges of the electron (with angular deceleration or acceleration $a$), resulting to the creation of the forces $F_{G+}$ and $F_{G-}$ ($G$ phenomenon). The result is the conversion of the E/M formation into a motion meridian of the electron (see http://viXra.org/abs/1507.0079), with an arrow of motion upwards in figure 10, i.e. towards the positive grouping units. The motion of electron to the upper end of the receiver creates there a negative charge, which reduces the electron speed to zero and the electron is repelled towards the lower end, while it is forced to oscillate at a frequency equal to that of the absorbed independent E/M waves.

The opposite happen now, when an electron is found with opposite spin ($s=-1/2$) in the second E/M formation with opposite allocation of its units, in which case the reversal of the electron spin creates a motion meridian of the electron downwards. So, the second E/M formation of E/M wave is absorbed.

The electron motion to the lower end of the receiver antenna creates there a negative charge, which reduces the electron speed to zero and the electron is repelled upwards to the upper end, while it is forced to oscillate at a frequency equal to that of the absorbed independent E/M waves.

However, if an electron ($s=-1/2$) is found in the first E/M formation (indicatively see figure 10), then the reversal of its spin at $s=+1/2$ further compresses the already compressed units of E/M formation and is not converted into a motion meridian of the electron. The same happens with the second E/M formation that follows, so a motion meridian is not created again and the E/M wave passes without interacting with this electron (with spin $s=+1/2$).

# 4. Neutrinos as independent E/M waves of one spindle

**Neutrinos** are created exclusively from the **cortex** of **particles**. As known, at each creation of an **electron** ($e$), a **muon** ($\mu$), or a **lepton** ($\tau$) a corresponding neutrino is created (**beta decay**). According to the Gosdas's Theory of Dynamic Space, the neutrinos are motion formations of independent E/M formations (of one spindle), which are created by the acceleration of the surface charges of the particles cortex.

The **E/M spectrum** has, as known, a maximum frequency $n=10^{24}Hz$ with a wavelength $\lambda=C/v=3\cdot10^{8}/10^{24}\approx10^{-16}\Rightarrow\lambda=10^{-6}$ $\mathring{A}$. The dynamic space can give E/M radiation of even greater frequency, but not by oscillation or by changing the kinetics of the electron, which has a significant inertial mass that prevents larger accelerations. Therefore, the formations of neutrinos cannot be photons or independent E/M waves. There remains, therefore, the search of strongly accelerated electric charges with minimal inertia, such as the charges of the particles, consisting of units with zero inertial mass (see http://viXra.org/abs/1410.0040). Hence, the creation of neutrinos is located at the strongly accelerated motions of the units, which happen in the cortex of the particles.

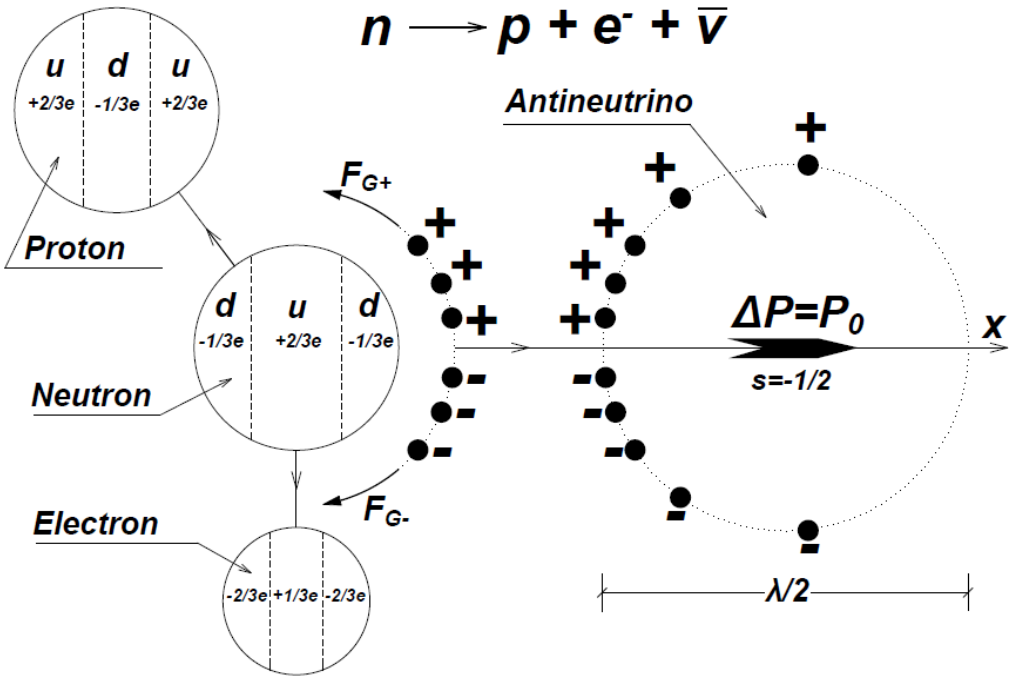


***Figure 11**: The beta decay creates the grouping units of the antineutrino (of one spindle) at the contact limits of the neutron quarks, formed (as schematically is designed) by the induction forces $F_{G+}$ and $F_{G-}$*

When a neutron breaks down into a proton and electron (beta decay), then at the contact limits of the **neutron quarks** (see http://viXra.org/abs/1502.0097) the adjacent opposite units are strongly accelerated, causing grouping units ($G$ phenomenon) outside the **neutron cortex**, as a full spindle of E/M wave (*figure 11*). Therefore, the neutrino and the antineutrino are similar to an independent E/M wave of one spindle and a wavelength $\lambda/2$, of **very high frequency** with a spin $s=+1/2$ or $s=-1/2$. This high frequency of the neutrinos will be calculated at a next paper.

# 5. Interpretation of Compton scattering

The Gosdas's Theory of Dynamic Space does not accept the **paradox** of the **wave-particle duality**. For the **photon-electron interaction**, at the emission of photons or independent E/M waves, see paragraphs 1 and 2, while for their absorption by the electrons, see paragraph 3. The above theory interprets the **Compton scattering** as follows:

The **accumulated force** of the photon is $F_s=nf_\tau$, where $f_\tau$ the force talantonion (see http://viXra.org/abs/1507.0079), $n=v_n/v_\tau$ the number of the fundamental E/M waves-talantonia, $v_n$ the frequency of the photon and $v_\tau=10^5 Hz$ the frequency of the fundamental E/M wave or of the **weaker radiation** that the dynamic space can give (see paragraph 1). Therefore, the photon of high frequency has a great accumulated force (into a small wavelength $\lambda$), which, in front of and behind the photon, installs a motion arrow $\Delta P=P_0$. This great pressure difference $\Delta P=P_0$ creates **high thickening** of units in a small $\lambda=0,71\text{Å}$ and blocks the entrance of the electron in E/M formations of the photon as a **compact wall**, while the same pressure difference $\Delta P=P_0$ with **low thickening** of units in longer wavelength $\lambda$ allows the entering of the electron. At Compton scattering, therefore, the electron impinges against the wall of the high thickening of units of the high frequency photon, because of which it is scattered.

How, now, does the electron come out from the E/M formation of high frequency, during its creation? As known, the breakage of a **potential concave** surface is easier than the breakage of a **potential convex** surface of the E/M formation and, therefore, the emission of high frequency photons from the electrons is possible. Consequently, the photon of **Compton phenomenon** behaves as a «particle» with **momentum** $p=h/\lambda$ in **modern Physics**, or $p=F_sL_0/C_0$ in Gosdas's Theory of Dynamic Space (see previous link), as an **autonomous compact motion formation**, where $L_0\approx10^{-54}m$ the **quantum length** of the **antithesis electric dipole** (see http://viXra.org/abs/1410.0040) and $F_s$ the accumulated force in the formation of the photon.

# 6. Emission and absorption of photons in atomic orbitals

In paragraph 1 the emission of the «**poor**» **photon** (fundamental E/M wave) is described as a consequence of linear acceleration of the electron. However, on **atomic orbitals** there is only the **centripetal acceleration**, causing the change of the **electron direction** that maintains it on **circular orbit**. Linear acceleration (or deceleration) occurs in **elliptical orbits**, wherein the created photon is absorbed instantaneously by the same electron (see paragraph 3).

Therefore, a photon emission happens only during the falling of an electron at a lower energy atomic orbital (see http://viXra.org/abs/1505.0211), which happens by linear acceleration (see paragraph 1). In order to jump at a higher orbital (with higher $n$), the electron needs energy to overcome the attractive force of the nucleus. As it is known, a photon gives this energy, which is absorbed and converted to an accumulated force on pairs of motion meridians (see http://viXra.org/abs/1507.0079), the mechanism of which is described in paragraph 3.

# Bibliography

Gosdas I.N. (1999), The Unified Theory of Dynamic Space, Published by Trohalia, Greek Edition in Athens

Gosdas I.N. (2001), The Structure of Nuclei, Published by SALTO, Greek Edition in Thessaloniki

Gosdas I.N. (2003), Unified Timeless Mechanics, Published by Hellenic Physicists Society, Greek Edition in Athens

Gosdas I.N. (2004), The Structure and the Dynamics of Space, Published by M. & G. Zorzos, Greek Edition in Athens

Gosdas I.N. (2006), The Structure and Function of the Universe, Published by Hellenic Physicists Society, Greek Edition in Athens

Gosdas I.N. (2008), Theory of Dynamic Space-The Universal Truth, Self-Published by the author, **English Edition** in Kastoria Greece

Tzoumpas M. (2013), The Timeless Universe, Published by Lefkiselida, Greek Edition in Athens