The Structure and Functional Characteristics of Electromagnetic Waves (17)

- The wave nature and particle properties of electromagnetic waves occur under different conditions. -

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Abstract

1. "Radio waves" are produced by moving electrons (current), and have a wave model structure. However, "light waves (photons)" are directly released from stationary electrons and have the structure of a particle model. In here, Radio waves and light waves are configured under totally different conditions and have different means of propagation, respectively.

2. Radio waves are composed of a combination of "magnetic field wave" and "space current." Also, the mechanical values of "magnetic field wave" and "space current" are equal and are mutually dependent. However, magnetic field wave has a representative nature of the wave model during the propagation process of Radio waves, and the progress of light velocity (C) is led by magnetic field waves.

3. Light waves are composed of the combination of "photocurrent" and "photomagnetic." Also, the mechanical values of "photocurrent" and "photomagnetic" are equal, and mutually dependent. However, photocurrent has the representative nature of the particle model during the propagation process of light waves, and the progress of light velocity (C) is led by photocurrent.

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Sequence

※ For your reference – This paper denies some arguments of quantum mechanics and the relativity, and suggests a new alternative. It is hoped the relativity and quantum mechanics of the abolition target will be excluded from the judgment standard.

Ⅰ. Introduction

In general physics, all electromagnetic waves are composed of electric field wave and magnetic field wave, and the types of electromagnetic waves are classified by the length of the wavelength. For example, electromagnetic waves are referred to as long wave, short wave, ultrashort wave, microwave, infrared light, visible ray, ultraviolet rays, *X*-rays, gamma rays, etc. depending on the wavelength.

However, electromagnetic waves can be classified into radio wave and light wave from a morphological perspective. This classification of two types is determined by the motion of the electrons which produce electromagnetic waves. For example, moving electrons (current) produce Radio waves, and the stationary electrons emit light waves.[6]
<http://batangs9.com/E-6.pdf>

The Radio waves produced by moving electrons have a wave structure of a pure longitudinal wave like a sound wave. However, light waves emitted by stationary electrons have individual units (1,2,3...) of the particle model. To distinguish light waves from Radio waves, there should be new definitions for names.

All electromagnetic waves generated by moving electrons will be

referred to as "Radio waves." The range of this "Radio waves" includes long wave, short wave, ultra-short wave, microwave, etc. However, all electromagnetic waves emitted by stationary electrons will be referred to as "light waves (photon)" for convenience. The range of this "light wave" includes infrared rays, visible rays, ultraviolet rays, *X*-rays, and so forth.

Radio waves exist at the state of spatialization by using the characteristics of outer space, and spread (distribute) to the wide area in space. Here, the wire of conductors can inclusively absorb Radio waves in space. Also, displacement current and voltage are generated inside the wire which absorbed the Radio waves.

However, light waves emitted by stationary electrons have individual units of the particle model. The light wave of this individual unit permanently maintains its original wavelength and oscillation frequency, and it is propagated to the last boundary of the space for billions of years. Here, stationary electrons can instantaneously absorb light waves of the light velocity. Also, the charge amount and the electric force are changed inside stationary electrons which absorb light waves.[7]

<http://batangs9.com/E-7.pdf>

Radio waves and light waves are composed of the same elements, and share a common point in which they are produced by the role of electrons. However, the role of electrons acts in completely different conditions during the production process of light waves and Radio waves. For example, the moving electrons which produce Radio waves do not emit (or absorb) light waves.

However, stationary electrons which emit light waves do not produce (or absorb) Radio waves. Therefore, the functional characteristics of light waves and Radio waves should be handled individually and separately.

In the body of the thesis, I will explain the morphological difference

between light waves and Radio waves. Also, I will introduce how the Radio wave of the wave model is produced around the moving electrons (displacement current). Lastly, the process of emitting light waves of the particle model from stationary electrons will be introduced.

Ⅱ. Body

1. Morphological differences between Radio waves and light waves

A - Radio waves consist of space current and magnetic field. Also, light waves are composed of current (photocurrent) and magnetic field. Therefore, the components (current, magnetic field) of Radio waves and light waves are the same. Also, the wave energy of light waves and Radio waves share a common feature in which they are inversely proportional to the square of the distance ($\frac{1}{r^2}$).

space current can be defined as the displacement (movement) of spatial elements, specifying that the space current is the wind (flow) composed of Pyeongs in space. Also, the space current and the general current of the kinetic electron have in common on the effect of equal functions, and are distinguished only by the difference in the amount of current. This space current is compared with the equal condition of induced electromotive force, and reacted in an equal function.

The objects to which the wave energy of Radio waves and light waves are reduced are different from each other. For example, the Wave amount (energy amount) is reduced at the ratio of $\frac{1}{r^2}$ during the propagation process of Radio waves, and the reduction of the Wave amount means the weakening of the intensity.[1]

<http://batangs9.com/E-1.pdf>

However, the individual quantity of light waves is reduced at the rate

of $\frac{1}{r^2}$ during the propagation process of light waves. In here, even if the individual quantity of light waves is reduced, the frequency and the wavelength maintain their original state and are permanently propagated to the final boundary of the universe.

B – Radio waves are produced by the motion of electrons. Therefore, it can be assumed that the kinetic energy of electrons is converted into the wave energy of Radio waves. However, light waves are directly emitted from stationary electrons. Therefore, it can be assumed that the components of stationary electrons are emitted (breakaway) during the production of light waves.

As described in the previously introduced thesis **"Structure and Active Functions of Elementary Particles,"** the unique vibrational energy acts as the progress of the present inside stationary electrons. The vibrational energy of these electrons and the wave energy of light waves are composed of the work energy with same functions, and they are compatible at equal values. Therefore, it can be assumed that the wave energy of light waves are released through the role of the vibrational energy inside the electrons.[7] <http://batangs9.com/E-7.pdf>

C – The wave height of Radio waves is determined by the frequency of the current. That is, when the frequency of the current is large, the movement velocity of electrons is high and the repulsive force (competence) of the switch is strong. Radio waves produced by this current have a high wave height (wave pressure) and a short wavelength.

However, the wave height of light waves is determined inside electrons. In other words, one electron can absorb multiple light waves simultaneously in a case where there are large individual amounts of light waves like the inside of the blast furnace. Also, the light pressure (wave height) of light waves is proportional ($A \times B$) to the quantity (A) and density (B) of light wave energy. Here, when one electron absorbs light

waves simultaneously, the quantity (A) and density (B) of the lightwave energy are increased at the rate of n times respectively. Therefore, the light pressure of light waves is expressed in the form of $(A\times B)\times n^2$ after the process of $(A\times n)\times(B\times n)$.

During the process in which n light waves are combined into one light wave, the light pressure of the combined light wave is increased at the rate of n^2 times. Also, the light pressure of light waves which is increased by n^2 times acts as the causative function in which the atomic energy level of Niels Bohr is expressed. The process of the expression of the atomic energy level will be described in more detail my different thesis (title: the atomic energy level and dromotropic light wave).[8]

<http://batangs9.com/E-8.pdf>

2. Generation and conditions for the existence of Radio waves

The magnetic field of the vertical spin orientation (vertical vector) occurs just like Fleming's rule around the displacement current which is formed by the movement of electrons. This generation process of the magnetic force can be easily understood through the situation diagram in Figure 1.

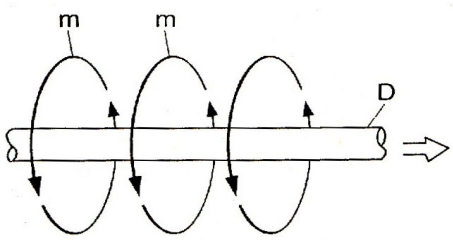

Figure 1. Diagram showing how the magnetic force of the spin orientation occurs through the motion (current) of electrons.

In the diagram shown in Figure 1, D refers to the wire in which the displacement current (motion of electrons) passes, the arrow ⇒ represents the direction of progress of the current, and m expresses the magnetic field of the vertical spin orientation. Here, the magnetic field of m

which has the spin orientation diffuses to all directions in space, and exist at the state of spatialization. Therefore, the bases of outer space can be assumed to have the function of magnetic force. That is, in space where the stress of the displacement current is, the m of the magnetic field is expressed and reflects the characteristics of space.[1] <http://batangs9.com/E-1.pdf>

As described in the previously introduced thesis **"The components of space and the conditions for the existence of light waves"**, space is filled with the medium of light waves. The medium of light waves is called **"ether"** in classical physics, but it will be called **"batangs"** in my thesis for convenience. Also, **"batangs"** in space consist of **"pyeongs"** and **"taes."**[6] <http://batangs9.com/E-6.pdf>

Pyeongs of batangs have magnetic properties, and this magnetic property of pyeongs is evenly distributed to all directions inside batangs. However, when batangs are subjected to the stress of the displacement current, batangs would have an oriented function in which the distribution of pyeongs are focused tendentiously. The oriented function of these pyeongs is expressed as N and S of the magnetic field. Here, the occurrence process of the magnetic field of batangs can be easily understood through the diagram in Figure 2.

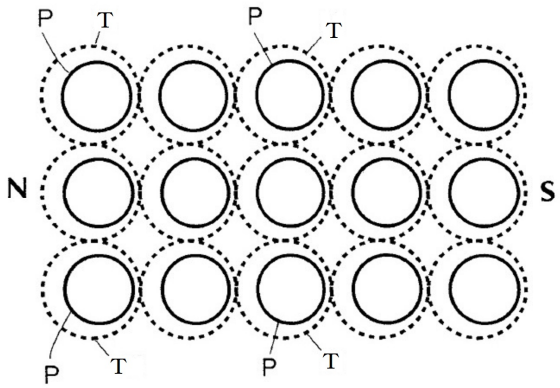

Figure 2. Diagram showing how the magnetic field of the oriented function occurs inside batangs.

In the diagram shown in Figure 2, T of the dotted line represents taes which mean the body of batangs, P of the line is pyeongs of

batangs, and N and S refer to the polarity of the magnetic field. Here, the taes of T and pyeongs of P have the same size of diameter, but these are represented by different sizes of diameter for convenience. Also, the body of batangs (taes of T) always maintains its original location.

Like the diagram in Figure 2, the distribution of pyeongs is tendentiously focused inside batangs which receives the stress of the displacement current. Also, the biased concentration of pyeongs is expressed as the "magnetic force" of the oriented function. The oriented function of "magnetic force" acts as the pushing force against other pyeongs of the environment, and the action of pushing is propagated to all directions in space.

All batangs subjected to the stress of the current have magnetic forces of the same directions in common. Also, the higher the tendentiously concentrated ratio of pyeongs inside batangs, the stronger the "magnetic force" acts.

The N and S poles of magnetic force are determined inside batangs, and the body of batangs is the center of N and S. That is, the space is composed of the source of magnetic force. Therefore, all batangs in space individually have magnetic forces of N and S. Also, the magnetic force of space should be divided into individual units of batangs.

In the process of changing the direction of the current, a wave of magnetic field is generated. The wave of magnetic field will be called "magnetic field wave" for convenience. Also, the N and S poles of the magnetic field wave repeat the change of directions as many as the frequency of the displacement current. Therefore, the wave of magnetic field wave can consecutively have its originally listed wave and frequency. Here, when N acts on the forward direction of the wave, S acts in the reverse direction.

The wave of magnetic field wave penetrates outer space. Also, in outer space where the wave of magnetic field wave penetrates, the vertical "space current (rotation direction)" occurs. This "space current" can be defined as the displacement (movement) of spatial elements, specifying that the space current is the wind (flow) composed of Pyeongs in space. Also, the space current and the general current of the kinetic electron have in common on the effect of equal functions, and are distinguished only by the difference in the amount of current. This space current is compared with the equal condition of induced electromotive force, and reacted in an equal function. Here, the direction of progress of the current which produces magnetic field waves and the operating direction of space current are identical.

Magnetic field waves and space current are simultaneously generated around the current, and the mutual conversion between them is infinitely repeated. This cyclical system of the two is expressed as "Radio waves." That is, the form of "Radio wave" means the combination of magnetic field waves and space current.

In the structure of Radio waves, the mechanical functions of magnetic field waves and space current are compared at the same values and maintain a mutual dependence. However, the magnetic field wave has a representative nature of the wave model during the propagation process of the Radio wave, and the space current of the vertical direction participates as an auxiliary function. Also, the progress of light velocity (C) is led by magnetic field waves during the propagation process of Radio waves.

The current must act on the current progress during the propagation process of Radio waves. Also, the magnetic force of the oriented function occurs only when pyeongs of batangs is under stress of the current. That is, the connectivity between the current and the magnetic field is maintained as the current progress. However, when the action

of the current ceases, the biased concentration of pyeongs is restored to its original state, and the oriented function of the magnetic field is instantly destroyed.

The magnetic field waves of the current and the sound waves of the air share a common feature in which they are composed of longitudinal models. However, the medium of magnetic field waves (pyeongs) and the medium of sound waves (air) act under totally different conditions. For example, the medium of sound waves is moved (displaced) as much as the width of the vibration of the wave energy, and the wave of the longitudinal model constitutes the width of the vibration of the medium.

However, batangs in space which are used as the medium of the magnetic field wave always maintain their original locations, and the formed distribution of the magnetic force constitutes the wave of the longitudinal model inside batangs. Here, the action of the magnetic force is distributed as a longitudinal model, and the components of the wave means the action of the force. That is, the wave of the magnetic field wave is not composed of components of material substances.

3. Generation and conditions for the existence of light waves

The stationary electrons instantly emit and absorb (accommodate) light waves of light velocity. Therefore, stationary electrons are not composed of firm solids and are assumed to have their own active function.

As described in the previously introduced thesis **"The structure and active functions of elementary particles"**, all types of elementary particles permanently maintain their **"autonomous vibration"** of expansion and contraction. That is, the active energy of light velocity acts as the current inside the elementary particles. Here, the active energy of light

waves can instantly emit or absorb light waves of the light velocity. Also, light waves are composed of pyeongs of material substances, and the light waves of pyeongs have functions of electric current. The function of the current of light waves will be called "photocurrent" for convenience.[7] <http://batangs9.com/E-7.pdf>

The photocurrent of the light wave is compared to the displacement current of the moving electrons under the same conditions. Here, the photocurrent of light waves and the displacement current of electrons can only be distinguished by the difference in size (volume and quantity). Also, the magnetic force of the vertical spin orientation is expressed just like in Fleming's rule around the photocurrent which penetrates outer space. The magnetic force of these light waves will be called photomagnetic for convenience.

The photocurrent and photomagnetic of light waves infinitely repeat their mutual conversion process. By the mutual conversion of photocurrent and photomagnetic, the individual units of light waves are formed. That is, the individual units of light waves both have photocurrent and photomagnetic.

In the structure of light waves, the mechanical functions of the photocurrent and photomagnetic are compared with each other in equal values and mutual dependence is maintained. However, the photocurrent has the representative nature of the particle model during the propagation process of light waves, and the photomagnetic of the vertical spin orientation acts as an auxiliary function. Also, the progress of the light velocity (c) is led by the photocurrent during the propagation process of light waves.

At the moment when the photocurrent of light waves penetrates batangs in space, the photomagnetic of the vertical spin orientation is expressed. However, the magnetic force of outer space is immediately

destroyed after the photocurrent of the light wave passes. That is, the photocurrent of light waves is propagated and the photomagnetic (oriented function of pyeongs) has a generation and extinction process at its original location.

The photomagnetic of light waves does not follow the photocurrent (pyeongs of batangs) obsessively. However, the photomagnetic simultaneously occurs at the passing point of the photocurrent. In this situation, it could be misunderstood that the photomagnetic of light waves and the photocurrent move together (simultaneous movement).

While the photocurrent and photomagnetic maintain mutual dependence, the light wave energy of the indidual unit cannot be spread (distributed) to all directions. Therefore, individual units of light waves can be propagated to billions of light years for billions of years like Soliton's wave. The individual units of light waves have been misunderstood as photons of the particle model in quantum physics. The mutual dependence between the photocurrent and photomagnetic can easily be understood through the model picture in Figure 3.

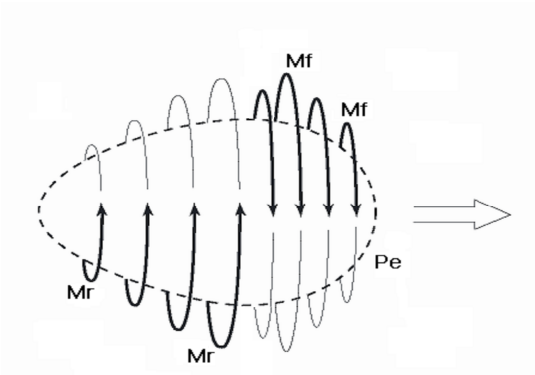

Figure 3. A model picture showing light waves consisting of photocurrent and photomagnetic.

In the model picture shown in Figure 3, *Pe* refers to the photocurrent which is propagated by the elastic force of light velocity, the big arrow ⇒ is the direction of progress of the photocurrent, *Mf* is the

photomagnetic occurring in the first half of the photocurrent, Mr is the photomagnetic occurring in the last half of the photocurrent, and the small arrows, ↑and ↓, show the direction of each magnetic force (Mr, Mf).

As shown in the model picture in Figure 3, the comprehensive force of pyeongs and the photomagnetic (Mf) of the right spin direction occur in the first half of the photocurrent (Pe). The photomagnetic of the first half has a high energy density and is distributed in a narrow area. However, in the last half of the photocurrent (Pe), the vacuum of pyeongs and the photomagnetic (Mr) of the left spin direction occur. The photomagnetic of this last half has a low energy density and is distributed over a large area.[6] <http://batangs9.com/E-6.pdf>

The photomagnetic of Mf which occurs in the first half of the photocurrent acts dominantly, and the photomagnetic of Mr which occurs in the latter half of the photocurrent acts inferiorly. Under these conditions, it can be misunderstood that only the photomagnetic of the first half (Mf) occurred, while the photomagnetic of the last half (Mr) does not exist.

Interference Effect – Light waves of individual units emitted by stationary electrons cannot have a wave model of a continuous structure. That is, the light waves of individual units are arranged at random intervals. However, during the process in which multiple light waves form one cluster, the photomagnetic (Mf) of the front light wave (A) and the photomagnetic (Mr) of the rear light wave (B) have opposite rotational directions, and two photomagnetics (Mr, Mf) act mutually.

When multiple light waves pass through a tiny film, the front light wave (A) and the rear light wave (B) are arranged at random intervals by the mutual action of the photomagnetics (Mr, Mf). Here, the front and

back intervals of light waves (A, B) are inversely proportional to the energy density (light pressure, wave height). For example, the higher the light pressure (wave height) of the photocurrent is, the narrower the front and back intervals of the light waves. The regular front and back intervals of light waves act as the causative function of the interference effect.

Polarized Effect – The photocurrent of light waves and the photomagnetic have a circular cross section. However, if the photocurrent of light waves (photomagnetic) is subjected to an influence (stress) such as a polarized board, liquid crystal, reflection, diffraction, curve, etc. the photocurrent of light waves is transformed into an elliptical cross section. Here, the elliptical cross section of light waves acts as the causative function of the polarized effect.

The uncertainty principle – Stationary electrons can freely emit and absorb the photocurrent of light waves. Therefore, it is assumed that the cross section of the photocurrent must be the same or smaller than the diameter of electrons. However, the distribution range of the photomagnetic diiffuses into space and has a large cross section. Also, the photomagnetic of light waves with a large cross section cannot pass through a huge tunnel which is a thousand times greater than the diameter of electrons. Here, the large distribution range of the photomagnetic acts as the causative function of the uncertainty principle.

Photoelectric Effect – When the photocurrent of light waves enters inside the atom, the lightlectric current of light waves and the positive electric force of protons temporarily work. Therefore, the binding force (interaction of the elastic force) of electrons to protons is temporarily lost, and electrons in orbit have a photoelectric effect that is emitted to the outside of the atom. That is, photoelectric effect means the freedom of electrons from protons. The emitted electrons

have different kinetic energies depending on the type of metals. Also, the emission of electrons is made vertically to the side of metals.[8]
<http://batangs9.com/E-8.pdf>

Compton Effect – The photocurrent of light waves has its own light pressure (wave height). Also, the light pressure of light waves can be reduced through the buffer action during collision. The reduction of this light pressure acts as the causative function of the Compton Effect.[8]
<http://batangs9.com/E-8.pdf>

Ⅲ. Conclusion

Moving electrons produce Radio waves which maintain the structure of magnetic field waves and space current. Here, the magnetic field wave has a representative nature of the wave model. However, stationary electrons directly emit light waves which maintain the photocurrent and photomagnetic. In here, the photocurrent has a representative nature of the particle model.

When the characteristics of the photocurrent and photomagnetic of light waves are utilized, various optical effects can be interpreted as rational logic. Therefore, all opinions in quantum physics based on the quantum model of light waves must be modified.

In the process of propagating the photocurrent of light waves, the photomagnetic of the spin orientation does not follow the photocurrent obsessively. Therefore, the electromagnetic theory of Maxwell based on the propagation of electric field waves and magnetic field waves must be revised.

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* Difference becomes specialty, Ideal becomes reality,
at the center of world in the name of center

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