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Kinetic Enrgy Emission and Redshift as Slowdown of Electromagnetic Waves

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Abstract

A completely new field of research on electromagnetic energy emission made exclusively on base of classical mechanic. Starting from the several important experimental results on field of light propagations, by indicating and describing a different natural source of waves and suggesting a possible experiment, the here presented hypothesis leads synthetically to conclude that electromagnetic waves may not be considered as classical waves and therefor, not connectable to the variations of wavelength calculated on ground of the Doppler-shift. Consequently, from this angle, they could also offer a sustainable alternative interpretation of the redshift of light coming from the most far from us celestial bodies. The method and relative analysis contained in this paper, avoids any form of criticism with regard to the conclusions offered by Relativity and quantum mechanics, but is directed in the first place, to introduce and analyze an existing natural different –from the classic ones - kind of waves and the possible way to experimentally confirm it. Results bring to the conclusion that a kinetic origin and dynamic of electromagnetic phenomena can concretely and mathematically be sustained.

Keywords: light propagation, waves, particles, kinetic thrust, Doppler shift, redshift

1. Introduction

In classical physics the principle of “waves” is connected to the concept of rippling of the material by the material itself. Sound, movements of water which propagate across its surface or the vibrations that run along a wire.

What the three kinds of waves described above have in common is the fact that they need a material substance through which to propagate, be it in a gassy, liquid or solid state.

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The speed of these waves is, therefore, calculated in relation to the material substance in which they occur.

Electromagnetic waves, for several aspects, are not similar to the above-mentioned waves. There are some important differences, like:

1) They don't apparently need a field of any kind in which to propagate:

When we speak about "Doppler-shift" we implicitly speak of rippling of material substances trough the matter self. Any theorizing referring to the Doppler-shift must be connected to classical waves in the sense here above explained. (Fig. 4)

2) Electromagnetic emanation consists in waves and particles as well.

The structure of magnetic waves on field of research can never be considered as a synthetic phenomenological context. Research can just be made on particles or, separately, on waves, treating the two parts of the same energy emanation as two different phenomena.

Differently, classical waves can be contained in a single context: there is a matter and rippling of the matter self.

3) Regarding the Doppler Effect, there isn't any difference when the source is moving from the observer or vice versa (or a difference which has been proved impossible to identify).

Relatively to classical waves, we record two different kinds of shift regarding the mentioned two cases. About this question we will analytically see further on

2. Method

We integrate those data in a single context, in order to concretely obtain an image of what the structure and the nature of magnetic waves concretely could be:
The most relevant data which we can make use, is the knowledge of the fact that the particles making up matter contain a vibratory motion.

As matter of facts it will be possible to consider the vibrations of an electron as a quick rotation around its nucleus: when we observe this phenomenon in a two-dimensional section, we could assume it as a quick vibration.

However, it is also well-known that the speed of these vibrations (or rotations) is directly proportional to the degree of heat of the matter in a relation that in rough synthesis we may define thus: the hotter the matter the faster its particles vibrate, the higher the frequencies it emanates.

Now let's imagine that, due to kinetic thrust, these particles are literally fired into space in the form of continuous jets, at the original constant speed -in relation to the source -of approx. 300 thousand Km/s. Not forgetting that the electrons have a vibratory movement, the result that we would obtain would be that of rippling fluxes, or better of particle waves, whose frequency would vary in relation to the degree of heating of the source emitting them. This looks like:

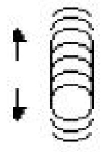

Figure 1.

It is already well known that each electron sends photons. Let’s imagine that those small particles together have been shot in a continuing flux from vibrating electrons. Then we see something like this:

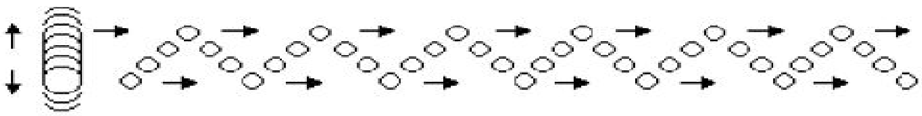

Figure 2.

It must be understood that, however each small particle follows a straight line, all parts together give the flux a waving motion. This would give a concrete explanation to the fact that research on field of electromagnetic emission have to consider waves and particles separately from each other: if we take a look at figure 2 we clearly see that every single particle follows a straight line, so that researching particles is impossible to get an idea of a wavy structure. Otherwise, researching waves we must synthetize the particle emission in a global wavy flux.

Heated matter is never heated uniformly: usually the nucleus is the part most heated. The temperature gradually decreases towards the external parts of the matter. Making a relation between thermic degree and speed of the particles' vibration, we would logically find that the highest frequencies would be emanated from the hottest layers while the lowest from the coldest. That means, the heater the matter, the faster the electrons vibrate, the higher the frequency of the waving flux, so that the distance between two wave tops become smaller:

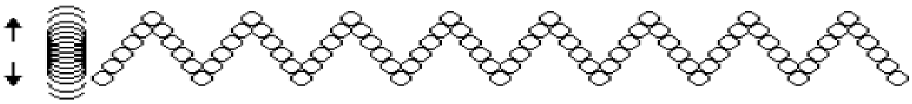

Figure 3.

Coming back to the points we mentioned at the beginning of this method we can see that this kind of structure offers us the following conclusions:

1) These “waves” do not need any material substance in which to propagate. Since they originate from the source that produces them, they can propagate even through vacuum and carry on by inertial force. In the absence of gravity and agents of attrition, we could suppose that the speed originally imparted and so the frequency of the waves remains unvaried (constant) to the infinite.

2) From this point of view we can see how the duality of emission regarding waves and particles can be totally and concretely explained: looking at this structure we can easily conclude that we are dealing with waves and with particles emanation as well. In facts, are the particles making up a wavy flux. This would be a concrete way to connect waves and particles emission in a synthetic phenomenological context.

3) Regarding the Doppler Effect, in this hypothesis the behavior of the waves in relation to the frequency variations ascribable to the relative motion is perfectly coherent with the premise. In the first place, we must make it clear that, in the present hypothesis, the variation recorded in relation to the source’s movements with respect to the observer, or vice versa, are not a consequence of the Doppler effect: in the sense that they do not represent a superimposition of frequencies, but a variation, caused by the relative increase or decrease in relative speed of the flux between source and observer.

4. Results

Relatively to the point 3, which represents one of the mentioned differences between classical waves and electromagnetic waves, we can obtain de following results:

a) Speed of vibration = **f / s**. Speed of the flux = **Vu**. The observer is moving from the source with velocity V. The distance between two wave-tops is:

$$d = \frac{1}{f} \text{ Of } Vu \tag{1}$$

or

$$d = \frac{Vu}{f} \tag{2}$$

How many wave-tops (**w**) receive the observer (**O**)?

$$O = a_o + v_t \tag{3}$$

$$W_1 = b_0 + V_u t \tag{4}$$

$$W_{1\,(0)} = O_{(0)} \Rightarrow b_0 = a \tag{5}$$

$$W_2(\Delta t) = O(\Delta t) \Rightarrow b_0 - d + V_u\Delta t = a_0 + V\Delta t \tag{6}$$

$$-d = V\Delta t - V_u\Delta t = (V - V_u)\Delta t \Rightarrow \Delta t = \frac{-d}{V - Vu} = \frac{d}{Vu - V} \tag{7}$$

$$\Delta t = \frac{Vu}{(Vu - V)f} \tag{8}$$

$$f_0 = \frac{1}{\Delta t} = \frac{(Vu - V)f}{Vu} \tag{9}$$

b) The source is moving from the observer with velocity V:

$$d' = \frac{Vu - V}{f} + \frac{V}{f} \tag{10}$$

$$d' = \frac{Vu - V + V}{f} = \frac{Vu}{f} \tag{11}$$

$$W'_1 = a_0 + (Vu - V)t \tag{12}$$

$$W'_2 = a_0 - d' + (V_u - V)t \tag{13}$$

$$O' = \emptyset \tag{14}$$

$$W_{1(0)} = O'_0 \Rightarrow a_0 = \emptyset\} \rightarrow W_1(\Delta t) = O'(\Delta t) \Rightarrow$$

$$a_0 - d' + (V_u - V)\Delta t = \emptyset \rightarrow d' + (Vu - V)\Delta t = \emptyset \tag{15}$$

$$\Delta t(Vu - V) = d' \tag{16}$$

$$\Delta t = \frac{d'}{(Vu - V)} \tag{17}$$

$$f'_0 = \frac{1}{\Delta t} = \frac{(Vu - V)}{d'} \Rightarrow f'_0 = \frac{(Vu - V)f}{Vu} \tag{18}$$

As we can see in both of cases there is no difference. In v (relative separation speed) we find the decrease of frequencies originally emitted, as we logically expect that f' contains a decrease of the original speed of light due to the relative motion between source and observer.

To make this point clear, we have to suppose that when a source is moving with respect to an observer the latter records an increase or decrease in frequency due to the fact that the speed of the flux in relation to the observer changes so that, during the same measure of time, the latter receives a lower or higher number of waves -tops than if the source were stationary. The same lower or higher number recorded when the observer moves with respect to a stationary source.

4. Discussion

When we compare light-waves to the above described kind of "kinetic waves" we will discover in the first place, as this hypotheses is basically part of an "emission theory" and specifically "original source" (the velocity of light depends on the motion of the source), will be confirmed by the following experimental results :

1) Maxwell:

In 1865 has been proved that electromagnetic phenomena propagate trough space in the form of waves.

2) Michelson-Morley:

This result, obtained in 1887, was originally directed to confirm the existence of a material substance (ether) in which light-waves could propagate. As well-known the result of this experiment leaded to exclude any form of etheric substance present in space. The premise of this experiment was grounded on the speed of earth around the sun. It was expected that the speed of light measured in the direction favorable to the earth's rotation would record a difference of 4/10 of point on the spectrum, than when measured in a neutral direction, as consequence of the Doppler-shift. As this result did not bear out the expectation (the four tenth of a point shift on the spectrum turned out to be less than a twentieth. Practically no difference at all), the interpretation of this result was not only that to exclude the existence of ether, but also to suggest a constancy of light-speed independently from the moving of the source trough the space.

This experimental result can give us an ulterior interpretation: as this experiment is carried out in absence of a relative motion between source and observer, we can also conclude there is no question of Doppler-shift when a source is moving through space in absence of relative motion with regard to its observer. So that, from this angle, in conformity with classic mechanic, also the speed of light, like any other measurable speed between two object can record an increase or decrease when calculated in relative motion.

De following experiments, since they are carried out on ground of de movements of sources trough space, they did not recorded any difference of shift on the spectrum.

3) Fizeau convection coefficient
4) Aberration
5) Kennedy-Thorndike
6) Moving sources and Mirrors

Experimental results like **Michelson-Morley using sun light** and **De Sitter Spectroscopic Binaries** which disagree with the "original source" theory, are starting from the ground of traditional waves, so that they make use of the Doppler calculations which leads to the conclusion that speed of light remains constant when measured in relative motion. From the premises of the here described waves, we can consider the two above mentioned experiments as a confirmation also for the present hypotheses, as we expect that the difference between ***f*** and ***f'*** calculated by the Doppler, exactly the same is as that calculated on ground of an increase or decrease of the relative motion, when the source is moving with respect to the observer. Starting from the premise of a Doppler effect, on contrary, we have to detract the increase or decrease of frequencies as consequences of the shift, concluding that the speed of light remains constant even when a source is moving to or from an observer.

Just to resume, on ground of the present hypothesis, when we could accept that increase or decrease of original emitted frequencies are consequences of increase of decrease of the by an observer registered frequency due to the relative speed and not of an increase or decrease of the wave length connected to the Doppler shift, we will find that the this hypotheses agree with all results on the field of light propagation experiments.

To make this poin more clear, let us consider the next:

About Doppler Effect

The most relevant differences between classical waves and electromagnetic waves are:

1. The speed of classical waves must be calculated in relation of the matter in which they occur. The speed of electromagnetic waves, as they are presented in this hypothesis, must be calculated with regard to the source that emits them by an original kinetic thrust.

2. Treating of classical waves, we have to consider that an objective variation of the wavelength can be registered when a source is moving through a matter (fig.4), but it remains constant when an observer is moving with regard to a stationary source (fig.5)

Let us take a look at de following figures:

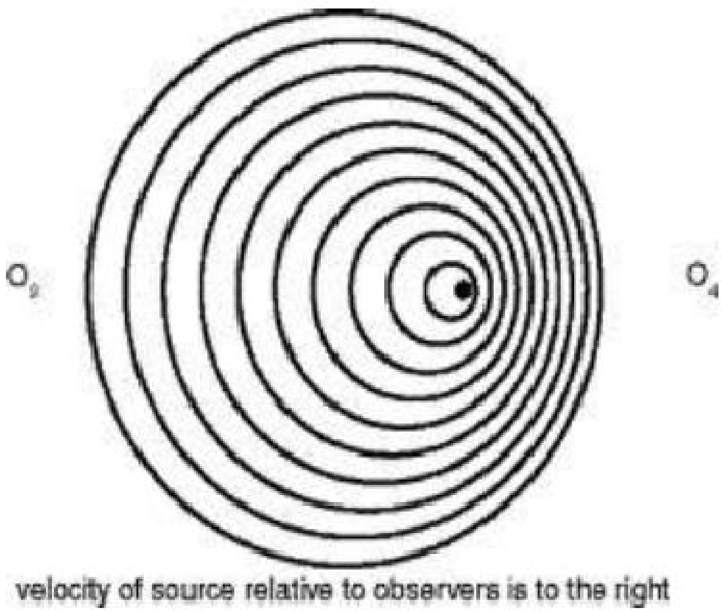

Figure 4

As we can see, the movements of the source trough the matter produce a real objective increasing or decreasing of the wavelength, so that the observer receives an increased or decreased frequency.

In case of decrease:

$$f = f_0 \frac{v}{v - v_{s,r}}$$

f_0 = originally emitted ; f = observed ; v = velocity of waves through matter; $v_{s,r}$ = velocity of source with regard to observers.

Treating of electromagnetic waves do not correspond to the observed frequency perceived.

When an observer is moving to or from a stationary source the wavelength originally produced will remain constant, but the observer receives a different frequency due to the relative motion (fig 5). In facts, we have to assume that in this case the differences between *femit* and ***fobsv*** are not depending on a real objective variation of wavelength, but subjectively recorded by an observer due to the relative motion between the latter and the source. As we have seen in both cases (source moving to observer or vice versa) the result we obtain on field of the Doppler shift is:

$$f_{obs} = 1/\Delta t = (Vu - V)f/Vu$$

Or:

$$f_{obs} = \frac{(c - v)f_{emit}}{c}$$

when dealing with electromagnetic waves.

This result, we obtain when an observer is moving to a stationary source, on field of electromagnetic waves, is the same we obtain when a source is moving with regard to a stationary observer. It is important to notice this result corresponds to the difference between emitted and observed frequencies, when this difference is not imputable to an alteration of the wavelength, but to the relative motion between source and observer: (fig. 5)

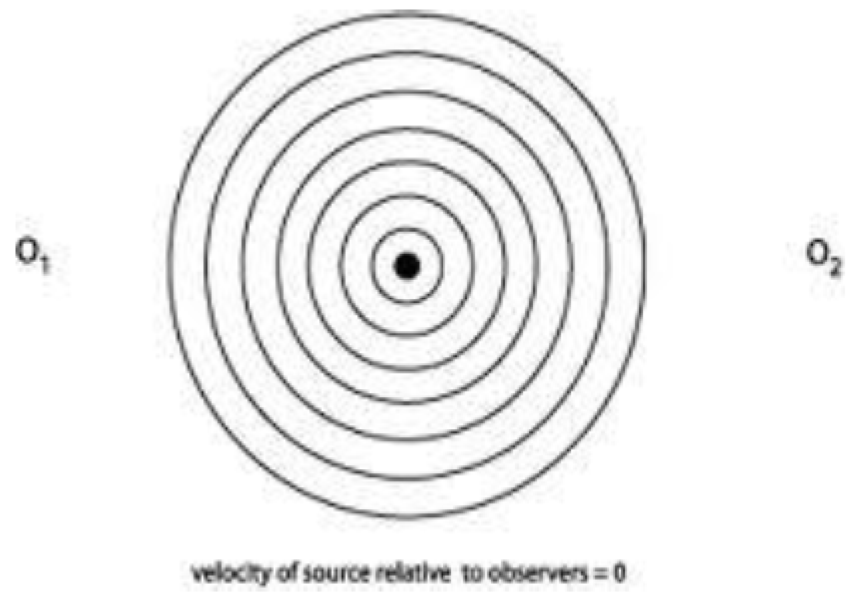

Figure 5. Observers Move to and from Source

Which means: in this case we have to input the differences in observed frequency to the increased or decreased relative motion between source and observer: (C + / -V).

Red Shift as a Slowdown of Electromagnetic Waves

Starting from kinetic emission would be a possible slowdown of light-speed expected, when we can imagine that those fluxes, travelling through distances calculated on billions of light years: it is logical to suppose a decrease of the original kinetic thrust by effect of gravity, which will be directly proportional to the distance that these far from us celestial bodies are separated from us. In other terms: the further the energy source, the slower the light fluxes. In this case , we have to calculate no difference between the wavelength emitted the wavelength observed:

$$(\lambda_{emit} = \lambda_{obsv} = \lambda)$$

The measure that in this case has been perceived as a decreasing of wavelength is in fact that of a decreasing of the frequency the observer records due to the global slowing down of the wavy fluxes, with regard to the observer self.

Results

We take as an example the quasar known as **3C-273**:

The hydrogen Ballmer-alpha line of this body has been calculated in a wavelength **of (λemit) 760 nm.**

The wavelength observed **(λobsv) in 656 nm.**

From the the angel of a slowdown of light we have to consider the observed wave-length as a observed decreased frequency:

$$(\lambda_{obs} = f_{obs})$$

The calculation of the redshift (z) based on this difference will be:

$$z = \frac{fobs - \lambda}{\lambda} = 0{,}1336$$

Starting from the principle of constancy of light-speed and consequent decreasing of wave-length due to the Doppler-shift, the calculation of the redshift of this body based on frequency has been calculated in ***z = 0, 1585*** .

Differently, when we calculate the value on base of a slowdown effect (*v*), and consequently that of the observed decreased light speed ***(Cobsv)****:*

v = cz= (300,000) (0, 1386) = 41,400 Km/s

And: cobsv = c-v = (300,000) -(41.400) = 258,600 Km/s

We obtain::

$$f_{obsv} = \frac{(c - v)\lambda}{c} = \mathbf{656}$$

which is the really obtained result.

Suggested Experiment

Starting from the ground that light-speed could be depending on the movements of the emitting source with regard to a stationary observe and, excluding the Doppler-shift as consequence of variations of frequency due to the source's movements, it will be possible to suggest the following experiment based on the speed of revolution of earth around the sun, with regard to an external celestial body. In this example we take Jupiter just as model. Our planet, related to the orbiter of Jupiter presents two phases: one with sign plus (+), in March and one with sign minus (-) in September:

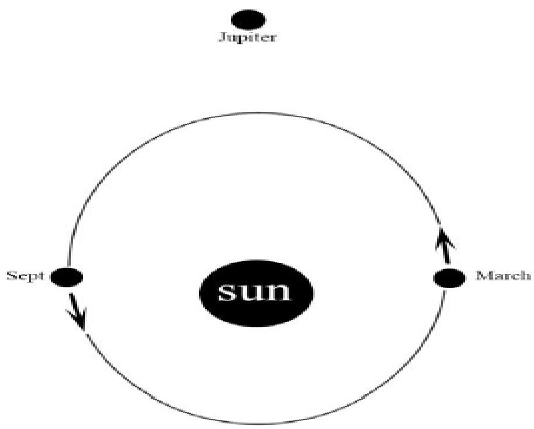

Fig.

Results:

C = 299.792,458
Velocity of earth's revolution (v) = 30 km/s
Average distance Earth/Jupiter (s) = 588.000.000 Km.

Sending a radio-signal in March in direction of Jupiter, the distance we have to calculate it to reach Jupiter and reflecting back will be:

S = 1.173.000.000 km.

To recover this distance at light-speed *(C)* the signal would take:

$$\frac{s}{c} = \frac{1.173.000.000}{299.792.458} = 3922'',7137$$

If we add the average rotation’s speed of Earth, we should obtain:

$$\frac{s}{(c+v)} = \frac{1.173.000.000}{299.822,458} = 3922'',3212$$

A difference of circa 4/10th of a second with regard to *C*.

To have a larger confirmation of this result, we could repeat the experiment on March. So we should obtain:

$$\frac{s}{(c-v)} = \frac{1.173.000.000}{299.762,458} = 3923'',1063$$

A difference of 8/10th of a second with regard to September: when this result would bear out to the expectation, will confirm that the differences of frequency produced by the movements of a source are not consequence of an increase or decrease of wavelength but that of variation of frequency recorded due to relative motion between source and observer, in conformity with the classic mechanic.

This kind of experiments, meant to a direct measuring of the speed of light and eventual variations different from those registered on ground of frequency, is never carried out before. Considering the simplicity of its realizing, this experiment could offer ulterior confirmation about de constancy of light speed

5. Conclusion

All the data, analysis and results included in the present hypothesis can concretely and correctly lead to the conclusion, the nature of waves making up electromagnetic phenomena, through this way, can also be explained by classic mechanic and kinetic energy emission.