

FOR ENERGY AT THE CYCLICAL MOVEMENTS

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Abstract

In all cyclical movements, including electromagnetic waves, it is about a process of transformation of energy by many time repetitions the same cycle. Here we will show the three legal situations that determine this transformation, namely: 1) Amount of the transformed energy E_0 from one cycle. The energy E_0 from one cycle will be a constant value as it is a result of unchangeable initial conditions. At a quantum level $E_0=h$ – the Planck's constant...depends on the constant structure of the field matter. 2) Total amount of the transformed energy E from n performed cycle. The total energy E is equal to the constant energy from one cycle $E_0=h$, multiplied by the number n of the cycles performed – $E=h.n$. 3) Speed of transformation of the energy dE/dt or power of the process according to the dependence: $N=dE/dt=h.(dn/dt)$ or $N=h.f$, where $f=dn/dt$ is the process frequency (number of oscillations per unit time). The compilation $E=h.f$, proposed by M. Plank, is a misunderstanding. This is evidenced by its juxtaposition with the dependence $E=h.n$ for random radiation – for example with a frequency $f=600.10^{12}\text{Hz}$, where $n=600.10^{12}$ is the number of oscillations: According to today's formula $E=h.f$, for 1 sec. the emitted energy is $E_1=h.f$, for 2 sec. – $E_2=E_1=h.f$, for 3 sec. – $E_3=E_1=h.f$, etc. This result is obviously implausible. The correct conclusion follows from formula $E=h.n$, namely: $E_1=h.x;n$; $E_2=2E_1=h.2n$; $E_3=3E_1=h.3n$ etc. (with time, the number n of the oscillations is doubled, tripled, etc.).

Keywords: cyclical movements, energy, Planck's constant.

The standpoint of contemporary physics on the problem of the energy of electromagnetic radiation is formed without clear outlined reasons - with conclusions more in line of the assumptions than of the rational knowledge. Therefore let's go back to the known, considered definitive, formulations.

Objectively speaking, in the electromagnetic waves it is about a transformation of energy from a potential into a kinetic form by many time repetitions of one closed cycle. In this respect they are completely identical to the cyclical movements of the macro level – rotating, pendulous, reversing, waves. This kind of material manifestations forms a large family of cyclical movements. In a word, the electromagnetic waves in their nature (according to their essential characteristics) appear an integral part of this family. Hence the conclusion: The electromagnetic waves should be subordinate to all, inherent in cyclical movements, regularities.

In a concrete plan, the cyclical way of transformation of the energy at quantum level (and any other) is determined by the following three legal situations:

1) Amount of the transformed energy E_0 from one cycle. The energy E_0 from one cycle will be a constant value as it is a result of unchangeable initial conditions. In this case, $E_0 = h$ – the Planck's constant...depends on the constant structure of the field matter.

2) Total amount of the transformed energy E from n performed cycle. The total amount of the transformed energy E will be equal to the constant energy from one cycle $E_0 = h$, multiplied by the number n of the cycles performed – $E = h \cdot n$.

3) Speed of transformation of the energy dE/dt (the transformed energy per unit time) or process power $N = dE/dt$. The energy transformation speed will follow the dependence: $N = dE/dt = h \cdot (dn/dt)$ or $N = h \cdot f$ where $f = dn/dt$ is the process frequency (number of oscillations per unit time).

As can be seen, the formula for the total amount of energy $E = h \cdot f$,¹ proposed by M. Plank, stands outside these norms. This means that it is not true. It is precisely of the error in it is due the fact that the dimension of the constant h is obtained without physical sense.

Let us show that in numerical example of an electromagnetic wave with constant frequency $f = 600 \text{ THz}$, where $n = 600 \cdot 10^{12}$ is the number of oscillations.

According to the formula $E = h \cdot f$ of Plank, at a duration of the radiation 1 second, the amount of transformed energy will be $E_1 = h \cdot f$. At 2 seconds duration, the transformed energy will be $E_2 = E_1 = h \cdot f$. At 3 seconds duration, the transformed energy will be $E_3 = E_1 = h \cdot f$, etc. This result is obviously implausible. The correct conclusion follows from formula $E = h \cdot n$,² namely: $E_1 = h \cdot n$; $E_2 = 2E_1 = h \cdot 2n$; $E_3 = 3E_1 = h \cdot 3n$ etc. (with time, the number n of the oscillations is doubled, tripled, etc.).

For information, the device „electric meter“, built on a cyclic process (disk rotation), works according to the formula: $dE/dt = h^* \cdot (dn/dt)$ or $(dE/dt) \cdot dt = h^* \cdot dn$, respectively $E = N \cdot t = h^* \cdot n$ [vat.sec] (h^* – the constant energy from one rotation of the disc...depends

only on its size and material). Other examples: Oscillator "AK-47", where h^* is the constant energy of a charge, n is the number of charges in the cartridge and $E=h^*.n$ is the total amount of released energy, independently of the frequency f of the shooting (**f =number of shots/second**). Oscillator „ICE“, where h^* is the constant energy of one rotation of the crankshaft depending only from the unchangeable volume of the cylinder, n is the number of rotations performed and $E=h^*.n$ is the total amount of energy released, independently of the shaft rotation frequency **f =number of revolutions/minute**. In general, in all cyclical processes, for the amount of transformed energy is in force the same dependence $E=h^*.n$ (at quantum level $E=h.n$).

It is not unnecessary to mention and the scientific fact (which we have repeatedly talked about) that the World is built on the Principle of opposite (material-ideal dualism). The same is also the Principle of determination, because the one opposite determines by the other. Another way of determination does not exist. In this sense, from the macro to the micro structures of matter, everything is qualitatively and quantitatively defined up to the boundary h . So the Principle of opposite is also the Principle of cognoscibility – from the macro to the micro structures of matter, everything is recognizable because there is a possibility of all-round determination. And when the theoretical thinking leads to indefiniteness (as is the case with the constant h of Planck...and others), this means that some confusion is allowed that the concept needs a correction, not a search for new ghostly explanations.

Reference

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