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Structure of the Lumineferous Ether

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The question of a structure for the lumineferous ether had occupied many physicists over a long period without deriving any satisfying result, particularly because of insufficient basic knowledge of the elementary components of the matter. After Einstein had abolished the ether in 1905, this question slowly sunk into oblivion. When later discoveries forced it to re-appear, no one discussed the "outdated" theory. However it was soon evident that physics without an ether, caused even greater difficulties. This led to the development of ever newer theories until finally, the ether was "secretly" introduced under another term (quantum vacuum).

If all properties "of the new vacuum" are considered, one comes to the conclusion that the ether particles must be the virtual electron-positron pairs in the ground state of the absolute vacuum, whereby the electron and the positron are in such proximity that their entire mass is apparently cancelled by electromagnetic attraction energy or the so-called binding energy. Particle distance amounts in this case to about 1,41fm, and the smallest wavelength of "normal" electromagnetic radiation is of the same order of magnitude:

$$m_{Paar} = 2m_e - \frac{e^2}{c^2 4\pi\varepsilon_o} \int_{r(m=0)}^{\infty} \frac{dr}{r^2} = 2m_e - \frac{e^2}{c^2 4\pi\varepsilon_o R_o} = 0\,,$$

or

$$m_{Paar}(r) = 2m_e\left(1-\frac{R_o}{r}\right) = \frac{e^2}{c^2 4\pi\varepsilon_o R_o}\left(1-\frac{R_o}{r}\right) \text{ für } r \geq R_o\,.$$

This result shows that the visible masses of the electron-positron pairs depend only on the distance between them. If Δr compared with R_o is small, then the mass of the photon is:

$$m_{Photon} = 2m_e \frac{\Delta r}{R_o} = 4m_e \frac{\Delta r}{R_e}.$$

Since the minimum particle distance in a pair is half as large as the classical radius *R* of the electron, the $1/r^2$ - law cannot be valid any longer for the electrostatic field. Within this range, the equations can be regarded as only approximations.

From this view, one can conclude that the photons are oscillating virtual electron-positron pairs in the vacuum ground state (harmonic oscillators). By enlarging the distance between the electron and positron in the pair, electric charge and mass are "produced". Since the force of inertia depends linearly on mass and squarely on electromagnetic attraction, it is understandable that "large" photons must have an accordingly large frequency. Fig. 1 shows schematically the charge and the visible mass distribution of a photon (electron and positron partly overlapped). In truth, the mass of the electron and positron remain the same at all times, but only the visible part can be affected by electromagnetic force.

If one regards the so-called pair-annihilation or positron- electron transformation in photons, one can conclude that the particles cannot be destroyed, but exist further as invisible virtual construction units of the vacuum or ether. Thus the following consideration must be valid,

$$e^+ + e^- \rightarrow n\gamma + \gamma_o \,,$$

whereby γ_o is a virtual electron-positron pair in the ether's ground state or an energy-less photon. Properties of γ_o are: Total visible mass (γ_o) = 0, total charge (γ_o) = 0, magnetic moment (γ_o) = 0, spin (γ_o) = 0 or 1. Thus (γ_o) is an ether or vacuum particle, or a zero-energy elementary photon. On the other hand, if a high-energy photon passes close to a strongly charged atomic nucleus (e.g. lead), it disintegrates into its component electron and positron (fig. 2), because the electron is attracted and the positron is repelled by the nuclear charge (it is the so-called "generation of pairs").

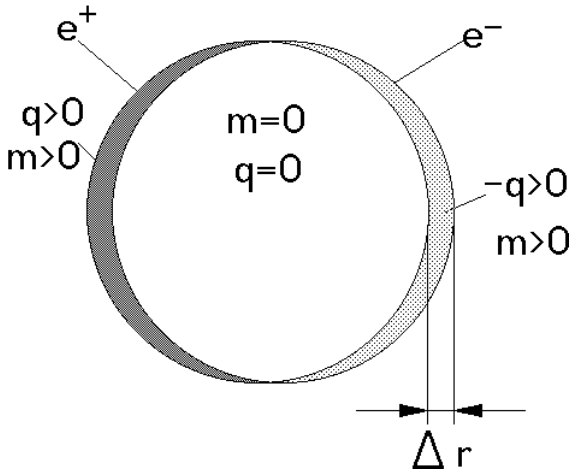

Figure 1: Schematic representation of an ether particle i.e. a virtual electron positron pair in the electrostatic field. Effected by the field, the electron and positron become slightly shifted against each other so that the charges are not completely compensated. In the non-compensated parts, the mass and charge are "produced". After giving their momentum to the nearest neighbour-pair (elementary photon). m=0 in the overlapped area means that only this mass is invisible.

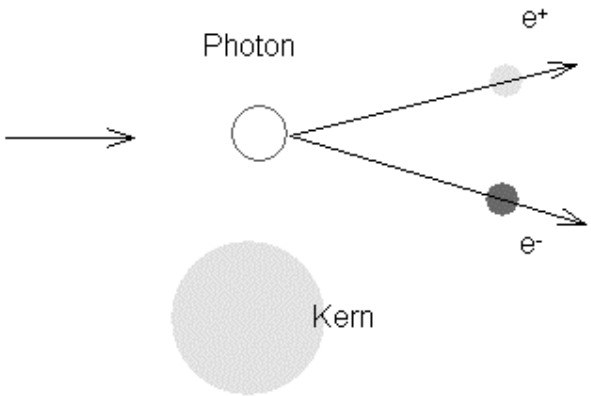

Figure 2: Decay of a high-energy photon by passage through matter.

Electromagnetic waves consist of elementary photons with the visible mass $m=hf/c^2$. In the lumineferous ether which is moved along by large masses, electromagnetic waves always propagate at full speed relative to the ether, which corresponds to the speed of light in the fixed vacuum. Since each mass in the gravitational field must be accelerated, on the other side, no further acceleration of the waves in the direction of motion is possible. waves change their total energy due to the principle of conservation of energy and momentum and therefore, the visible mass (the speed of light remains constant therefore the mass must increase). One sees this change of energy as blue or red shifted radiation in the gravitational field. However, electromagnetic waves are to be understood as oscillating electron-positron pairs, After, it is plausible that energy-mass equivalence must be valid purely numerically, because the so-called binding energy or mass defect is to be likewise considered.

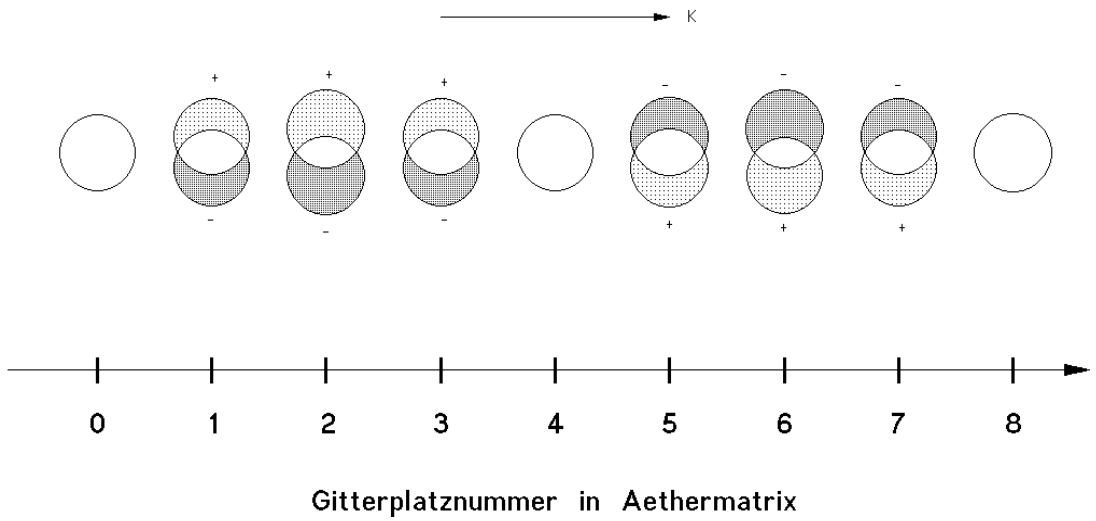

Figure 3:Coupled oscillations of virtual electron-positron pairs or elementary photons (deflection of particles is, for the sake of clarity, represented extremely large) build an electromagnetic wave. The order of magnitude of the wavelength in this case is about 10^{-11} m. The highest-energy elementary photons sit at lattice sites 2 and 6.

If one regards a wave packet or a elementary photon chain schematically as shown in fig.3, the mass of the wave train can be understood as the sum of all non-compensated portions (grey ranges in fig. 3) of the electrons and positrons which take part in the wave train:

$$M_{wave} = \sum_{i=0}^{N-1} m_i(e^-) + \sum_{i=0}^{N-1} m_i(e+) = M(e\_) + M(e^+) .$$

The total energy of the electromagnetic wave is:

$$E_{wave} = M_{wave}c^2 = \frac{1}{2}\sum mc^2 + \frac{1}{2}\sum hf \ ,$$

whereby, for individual elementary photons is valid:

$$mc^2 = \frac{1}{2}mc^2 + \frac{1}{2}hf = hf \ .$$

This is nothing else than the kinetic energy of a mass *m*, which moves with the speed of light, plus

the oscillation energy of a harmonic oscillator in the ground state, which must be just as large in accordance with the principle of energy distribution (equi-partition theorem). Here one sees that photons possess one "proper mass" *m*, which they take away from the body when leaving it.

This result is fully compatible with De Broglie relation, if the classical momentum of the photon is used:

$$\lambda = \frac{c}{f} = \frac{h}{p} = \frac{h}{mc} \Rightarrow hf = mc^2 .$$

That means, the electromagnetic mass is transferred by the photon-wave from a body to another – this cannot be spoken of as the production of matter. The consequence: The photon, electron and positron do not move at all, but “give” their physical properties to the next neighbour in the lumineferous ether and in all these three cases it can be considered as the propagation of electromagnetic waves with a maximum speed equal to the speed of light. The energy-mass equivalence is not justified universally, but apparently holds only in some special cases of electromagnetic interactions.