

Holographic, Two-Step, Gravitational-Electromagnetic Interaction

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Abstract. This note shows how misleading the Einstein propagating photon is, and how the gravitation-electricity symmetry is patent in the holographic two-step interaction scheme in accordance with Coherent Cosmology.

The wave-particle dualism has never been correctly presented nor elucidated. The origin of this situation is the Einstein's paper on a 'propagating' photon. A Nobel prize was given for this, and not for the relativity papers, because it was known that Einstein was not the real discoverer of either Special Relativity Theory (SRT) (attributed to Poincaré by Lorentz, and, later, by Whittaker) or even the General Relativity Theory (GRT). According to Leveugle [2], Hilbert published the correct GRT equations 5 days before Einstein, several months after having sent a letter to Einstein, containing the solution of the Grossman's formulation of the problem. But the crucial part of the printer's proof in Hilbert's paper was cut off [2], and Hilbert was accused of plagiarism!

The obvious reason why Hilbert did not claim priority is that he was himself at the origin of the spoliation of the *French* physicist Poincaré for the profit of a *German* one, in the war atmosphere of the time. According to Leveugle [2], Hilbert asked Einstein (who was suspected by Planck to be a plagiarist of Gibbs' thermodynamics) to sign the famous 1905 SRT paper. Indeed, this text contains the word 'group structure', a term only specialized mathematician, as Hilbert, would know. Note that, with this obvious necessity of a 'group structure', the postulate of '*c*' speed invariance is useless [3]. Moreover, the famous $E = mc^2$ paper of this artificial 'genius', was, in reality [4], a demonstration of $\theta = 0$. Einstein himself recognized in a second paper on the subject (may 1906) that Poincaré has demonstrated $E = mc^2$, as soon as 1900, in its full generality. The strange inactivity of the French colleagues of Poincaré is partly explained by the rivalry between the dominant Ecole Normale (Paul Langevin) and Ecole Polytechnique (Henri Poincaré).

The harm caused by this 'propagating' photon and the fallacious prestige of Einstein cannot be over-rated. This led to a general state of confusion. For instance, in the paper on the stimulated emission, Einstein used only thermodynamics argument, so did not precise that this is a *coherent* amplification, so he missed the laser discovery, and Feynman later insisted that one *cannot* understand quantum physics.

De Broglie extended the light wave-particle symmetry to matter, proposing that particles could propagate by wave, and *this* was correct [1]. To resume: 'everything propagate by waves' but for matter, it was not recognized that this means a disintegration-reintegration process, including a matter-antimatter oscillation [1]. Such a misconception of a propagative photon led de Broglie to the vain research of a 'double solution', and Einstein to propose that hidden *local* variables exist, which was, *of course*, refuted by experiment. Some consider this is a triumph for Bohr's viewpoint, but his assertion 'quantum physics is complete', is itself reductionism nonsense, because it does not include *the cosmos, the obvious source of hidden variables*, in an holistic approach [1].

Arthur Haas has proposed the first correct formula for the atomic diameter, 3 years before Bohr, simply by adding the Planck formula $E = hf$ to the virial theorem in the simplest atomic model [1], while the subject of Einstein thesis was precisely to determine atomic dimension!

Another bad consequence of a 'propagating photon' is that, by confirming the *deceitful* concept of a 'light ray', it retarded the discovery of a decisive property of coherent waves: holography (Gabor, 1948). Indeed, simple *c*-free holographic analysis leads to a Grandcosmos of radius R_{GC} , equal to C/c times the radius of the observable Universe where $C = cP^3pH/a^6$, with P , p , H the Planck, proton and Hydrogen masses by respect to the electron one and $a = 137.036$, the inverse of the fine-structure constant. An outstanding correlation involves the Grandcosmos volume, with unity the bare Bohr radius r_0 [1]:

$$(4\pi/3)(R_{GC}/r_0)^3 \approx a^3/\pi \quad (1)$$

proving a is a *calculation basis* in a Computing Grandcosmos.

Replacing this 'propagating photon' by a *two-step interaction* [1,5], this would involve tachyonic waves, including a gravitational speed $C_G \gg c$ (according to Van Flandern [6], the stability of planet orbits implies $C_G > 10^{10} c$). The emitter-receptor symmetry implies that a *divergent* spheric wave from a source S must be transformed in a *convergent* wave towards a *specific* receptor R . The holographic formalism [1] (which is precisely a *two-step* one) applies directly: the bi-frequency source S is associated with two stationary unitary ($ss^* = 1$) waves of form $s + s^*$, with $s = \exp(f2\pi(t - r/v))$, where $f = F_G$ and f_{elm} , tied by the Gabor holographic condition $C_G/c = F_G/f_{elm}$, while potential $F_G f_{elm}$ - receptors corresponds to $\Sigma(r + r^*)$. A gravitational F_G - hologram is firstly formed in the vacuum (which so must be *not empty*): $(s + s^*)\Sigma(r + r^*)$, which includes the *resonant* term $\Sigma(sr^* + s^*r)$. In a second step, an excess of the f_{elm} -frequency wave $s + s^*$ produces the term $(s + s^*)\Sigma(sr^* + s^*r)$ implying an excess of the waves $\Sigma(r + r^*)$, permitting a quantum *cosmic calculation*, due to the large value of C_G , to determine which precise receptor will get *all* the photon energy, a scheme which maintains the information: *'all the excess energy is concentrated in an unique atom'*. This means atoms are in a state of *optimal* communication: it is why all Hydrogen atoms have strictly the same mass.

Now, consider a *galilean* steady-state cosmology, with the speed of galaxy recession *strictly* proportional to distance, in an Universe of invariant radius R and invariant mass M . Note that in the standard cosmology R is variable, so cannot be tied to any holographic conservation. The classical gravitational potential energy is $-(3/5)GM^2/R$. Now, by integrating the galactic kinetic energy $(dm)v^2/2$ in the R -radius sphere, one obtains the non-relativistic result $(3/10)Mc^2$. By equalizing these energies, this corresponds to the 'critical condition' $R/2 = cT/2 = GM/c^2$, *without any appeal to the ad-hoc 'inflation'*, introduced by standard cosmology, and corresponding to an Euclidean geometry, after involving GRT!

The separation of the total Universe energy Mc^2 between its 3/10 and 7/10 parts is so clearly demonstrated, but is an unsolvable enigma for current cosmology based on GRT, a *local* theory applied to cosmology, a *reductionist* method Poincaré has excluded, arguing that in a *unique* Univers, differential equations would imply free parameters [1]. It is recalled that the Eddington's prediction [7] for the number of equivalent Hydrogen mass in the Universe is 136×2^{256} , a prediction which was largely mocked, but which is consistent with the official concordance value $T = 13.80(5)$ Gyr, taking account of the above 3/10 relative density for matter:

$$M_{mat}/m_H = (3/10)Tc^3/2Gm_H \approx 2^{256} \times 136.2(5) \quad (2)$$

probably the most remarkable scientific prediction in History.

The length $R/2 = GM/c^2$ is given by the dimensional analysis excluding \hbar . But, since tachyonic speeds are necessary to connect a so vast Universe, one must look for a value of $R/2$ independant of c . Such a c -free distance is given by the formula \hbar^2/Gm^3 , so the simplest choice is:

$$R/2 = \hbar^2/Gm_p m_n m_e \quad (3)$$

respecting the symmetry between electron, proton and neutron, the three main particles of Atomic Physics, and compatible with c times the so-called 'Universe age' 13.80(4) Gyr. This formula was found in 3 minutes of cosmology reapraisal (september 1997), and associated with holographic conservation and gravitation-electricity symmetry, but was censored by the French Academy, under the fallacious pretext that 'Primordial Big Bang is proved'.

With $m_p \approx m_n \approx m_H$, the above term Gm_H^2 appears in the gravitational force between two Hydrogen atoms, by far the more numerous atom in the Universe. By comparing with the elementary electric force e^2/r^2 , that means a symmetry $m_H^2 \leftrightarrow e^2$, corresponding to the formula

$\hbar^2/e^2m_e = r_0$, the bare Bohr radius [1]. *This shows how the holistic approach is far much efficient than the reductionist one.*

Applying the same symmetry to the critical formula, one gets the length $(R/2)(R/r_0)$. Assuming a common frequency $c/r_0 = C_G/R$ is at work, this implies :

$$C_G/c = R/r_0 \approx 2.47 \times 10^{36} \quad (4)$$

With the above holographic 'Gabor condition', $C_G/c = F_G/f_{elm} = m_G C_G^2/m_e c^2$ this means $C_G/c = m_e/m_G$, so the graviton mass would be:

$$m_G = m_e r_0/R \approx 3.69 \times 10^{-67} \text{ kg} \quad (5)$$

By comparing with the Marchal photon mass [8] $m_{ph} = \hbar/c^2 t_{cc} \approx 1.22 \times 10^{-55} \text{ kg}$, tied to the non-Doppler Coherent period [1] $t_{cc} \approx 9600.61 \text{ s}$, one observes, to 1%, a *direct* connexion with the *electroweak interaction* coefficient $a_{ew} = \hbar^3/G_F c m_e^2$, where $G_F \approx 1.435851 \times 10^{-62} \text{ Joule m}^3$ is the Fermi constant :

$$m_G/m_{ph} \approx a_{ew} \quad (6)$$

Moreover, C_G connects directly with the above superspeed C and the characteristic term a^a :

$$C^9 / C_G^7 \approx c^2 a^{a+\exp(-2\pi)} \quad (7)$$

So the holographic two-step gravito-electromagnetism interaction and Coherent Cosmology are mutually consistent.

References

- [1] Sanchez F.M., Kotov V. and Bizouard C., *Towards Coherent Cosmology*, Galilean Electrodynamics, special issue, winter 2013, pp 63-80. 'Towards a synthesis of two cosmologies: the steady- state flickering Universe'. Journal of Cosmology, vol 17. (2011).
- [2] Leveugle J., *La Relativité, Poincaré et Einstein, Planck, Hilbert*, Ed. L'Harmattan, Paris, 2004.
- [3] Levy Leblond, J-M. *One more derivation of the Lorentz transformation*, Am. J. of Phys. **44**, 271 (1976).
- [4] Ives H. E. *Derivation of the Mass-Energy relation*, American Journal of the Optical Society of America, avril 1953.
- [5] Whitney C. K., *Essays on Speclal Relativity Theory*, Hadronic J., vol 29, p. 52-53 (2006), reprinted from Galilean Electrodynamics Special Issue Winter (2005).
- [6] Van Flandern T., "The speed of gravity. What the experiments say", Phys. Lett. A250, p. 1, (1998).
- [7] Eddington A.S., *The Fundamental Theory* (Cambridge, 1946)
- [8] Marchal C. *Physics with photons of non-zero rest mass*, Proceedings of 28th Intern. Workshop, p. 152-166. Protvino, Russia (2005).