**The modified Einstein-Planck law document**

Planck’s law should be modified so that the frequencies, respectively, wavelengths of 380.43nm and 3.08 nm have the same energy, 3.259eV. The suppositions are:

1) The electromagnetic radiation of the black-body radiation is in thermal equilibrium.

2) The photons do not interact with one another (the superposition principle), so the radiation may be regarded as a photon gas like an ideal gas. The distribution of photons among the various quantum states with definite values of the momentum and energies ε = ~~h⸱~~ω is given by the formula: n = 1/(e~~h~~ω/T-1). Planck’s distribution law of black-body for photons of Bose statistics is (according to 63.3) [1]:

(1) where V is the volume of photonic gas. We have Or we can multiply with h·ν to obtain the spectral distribution in the interval ω & ω + dω, so the energy density: (2) with ω = 2πν and N(ν) = And V is the quanta of photonic gas with cylindrical symmetry of the height of the cylinder is Tq·c, and with radius rb and area π· Thus, the volume (V) of photic gas has the value *Tq·c·π·* = π· => The energy per quanta Tq is:

For the unit energy per time quanta per angle unit, where U(ν, T) (or < E >) is the internal energy

written and are the number of states of the oscillators times the volume of photonics gas Tq·c·π·rB2, so the differential energy quanta for a photon with velocity c, period of oscillations t0, and the sum of infinitesimal value t=1/ν for Tq (quanta => Tq =1.765·10-19 sec) is:

(3)

We make the supposition that the energy of photons is proportional to period of Tq times the derivative of Planck body law with respect to ν. The interval νmin ÷ νmax is the lowest frequency of the photon energy at wavelength 30μm ÷ 3nm. All-optical integral paths from the derivative of the Planck body law occur from the Feynman principle of the Optical Lagrange Function. We have photons (λ=>3nm ÷ 30μm). Thus the the total amount of energy quanta, for an interval of frequencies between (100nm-10μm), one should approximate Planck’s formula ε = ~~h⸱~~ω. Planck empirically supposes that all quantum energies are equal to one another by looking at experimental data from infrared to UV (1μm-200nm), with Tq=1.765⸱10-19 sec so:

(4)

Thus the the total amount of energy quanta, for an interval of frequencies between (100nm-10μm), one should approximate Planck’s formula ε = ~~h~~⸱ω. Planck empirically supposes that all quantum energies are equal (the linear proportionality) by looking at experimental data from infrared to UV (10μm-100nm) page 9 paragraph #10 => [“On the Law of the Energy Distribution; Max Planck January 7, 1901”](http://www.michaelvio.byethost8.com/MPlanck.pdf)

Einstein's original paper: <https://einsteinpapers.press.princeton.edu/vol2-trans/100>

For photons, we assume that the quantum energy is different from the Planck law E ~ h⸱ν, thus for the frequency of extended UV, visible light to infrared is usually 100nm - 10μm (see the linear part of the plot in PlanckBB1.mw). Likewise, we admit that the Planck distribution law of blackbody is valid (1), but quantum energy is slightly different from E ~ ~~h~~ω, depending on the frequency. Also, for a quantum of time, the infinitesimal value E(ν)pν should be (3). All-optical integral paths from the derivative of Planck body low are quantically equivalent (hp is Planck’s constant for photons, ha audion, hm monopole, hmw microwave that occurs from the Feynman principle of the Optical Lagrange Function). , thus ŕ is a constant in the velocity of photons. The exact solution is to consider h(ν) as a variable series => E(ν)=h(ν)⸱ν, thus we have È(ν)=ĥ(ν)⸱ν+ h(ν). <http://www.michaelvio.byethost8.com/PlanckPh.pdf>

The energy for a photon into the quanta volume is the sum of infinitesimal in a period Tq so we integrate on TimeQuanta where Tq is the time quanta for the photons (the time in which light travels (rb) the Bohr radius Tq =1.765·10-19 sec) at temperature T. Thus, for a wide range of frequencies in visible light, the law should be E ~ h⸱ν (λ=>100nm ÷ 10μm). Thus, at λ going down to => 3nm, the quanta of energy drop for a fall to 0. We have two cases for large ν, thus the exponential is dominant and for low frequency where ν < 1014 Hz. The Modified Plank’s Law for the photons link: <http://www.michaelvio.byethost8.com/PlanckEinstein.pdf>

<http://www.michaelvio.byethost8.com/PlanckAud.pdf>

<http://www.michaelvio.byethost8.com/PlnEinst.pdf>

Gamma-ray’s equation is easier to solve , thus ŕ is a constant in the velocity of gamma-ray and the derivative of energy Ė(ν)=h(ν) + ν⸱h’(ν). But for γ-ray with time quark negative the equation (2) of energy density keeps the structure with the difference that U(ν, T), the internal energy is constant b because the energy of a transversal wave is of the initial oscillation of one nucleus and depend only of number of states times volume of gas with spherical symmetry V = (4/3)πrb3 per quanta of time Tq, rb is Bohr radius and speed of light c:

(5)

(6)

Where Tq =1.765·10-19 sec, the time quanta.

Thus, the quantum energy is the number of states of the oscillators multiplied by internal energy, which could be either constant for γ-rays, or Planck’s distribution: For photons, magnetron (radio-frequency, so cylindrical), & microwaves, and audion (spherical). Solving the equation (4) is possible by knowing the structure of Planck’s law E = hν+aν2+bν3…This is Planck’s law for photons, also available for magnetrons, microwaves, radio-frequency, and audions by changing the specific “constant h”. So we have E ~ hγ ν where hγ = constant as in PlanckML.pdf.

<http://www.michaelvio.byethost8.com/Audion.pdf>

A red line graph with numbers

Description automatically generated We start with a similar equation for phonon:

(7)

We assume that the energy of the audion is E(ν)va = 0.007486790719 ν – ha1·ν2…until ha4 ν5. For the audion that we will determine, we have the infinitesimal energy spherical symmetry for the audions and with velocity va, 343m/s, and for an audion in the air, the time quanta is the time that sound travels the radius, Bohr. Tq1 = rBohr/va = (0.529/343)·10-10 => The audion’s TimeQuanta Tq1=1.54297·10-13s. The volume of phonon gas with spherical symmetry V = (4/3) π·rb3 per quanta of time Tq1 and speed va, where the factor (c/va)is relative to the kinetic energy of the audion relative to the photon. For simplification, we assume that the energy of the audion E(ν)va = 0.007486790719 · ν – ha1·ν2…until ha4 ν5

Where I guess the first coefficient 0.00762014687 from several values of energy as **E = 3.259eV for ν = 435Hz**

Thus, Planck’s law should look like a high-degree order relative to ν, thus for photon fitting ***the value in*** ***eV*** we have E = hν-h0 ·ν2 … thus best fit for photons:

Eph ~4.135667699·10-15·ν +3.960517553 ·10-34·ν2 - 6.133245132 ·10-49 ν3 + 1.860517531 ·10-83 ·ν5 for the magnetron we have Em = hmν - hm1·ν2… hm = ~ 5.663809031 ·10-9 eVs and hm1 ~ -2.024381148 ·10-20eVs. The best fit is: Em ~5.663809031 ·10-9 ν - 2.0244·10-20  ·10-29·ν2 …

We have the exact correlation as in (3), but a higher-degree order is more accurate, for particles with positive (or zero) time Quark. <http://www.michaelvio.byethost8.com/PlanckML.pdf>

We have ~ linear dependence for negative time Quark (the velocity greater than 3·108 m/s as a γ-ray).

For γ-ray, we have Eγ = hγν where hγ = 9.340461792·10-18 eV·s. The γ-ray below ≤ 2nm has spherical symmetry, and the condition at the limit f(R) =0 & propagation equation in a couple of Time Quanta. (with the γ particle mediating particle and Energy with one solution relative to ν).

Audion with the speed “va”, in an environment with the Dirichlet condition is f (R) = 0 for constant spatial distance R & propagation equation. The audion with spherical symmetry and frequency below tens of kHz (with the audion mediating particle and Energy with two solutions relative to ν).

E = hAeν – ha1·ν2…thus Planck’s law for the audion.

The electromagnetic Radio Frequency that extends within the limits of tens of Hertz to ~15Khz ÷18GHz with cylindrical symmetry and the condition at the limit f(2R) =0 & propagation equation (with the magnetron mediating particle and Energy with two solutions relative to ν). Thus, we have:

(8)

With μ0 the vacuum permittivity and B the magnetic induction (the magnetic flux density) for the monopole.

Between wavelengths within the limits of ~300µm ÷ 10cm, (1Thz÷3GHz), we have Microwaves with spherical symmetry and the condition at the limit f(2R) = 0 & propagation equation (with the microwave mediating particle and Energy with two solutions relative to ν). <http://www.michaelvio.byethost8.com/Magnet.pdf>

In the spectroscopy experiment, the energy difference between the 2S ½ and 2P ½ levels of the atom corresponds to the 2.395Ghz frequency microwaves measured in the 1947 Lamb-Retherford experiment known as "Lamb shift," but the energy is incorrectly deduced. It uses the Planck-Einstein equation for microwave, thus the energy is incorrectly deduced from the **Planck constant for Microwaves hmw = 7.890480167·10-11 eV·s,** **not** h = 4.135667697·10-15 eV·s for photons. We have the correct calculus of the Lamb shift 2S-1/2 and 2p-1/2 energy in eV=>3.59-13,6/4=0.1889eV I suspect that the threshold value of the wave-particle transition is related to the CMB microwave detected by Penzias & Wilson between 160.23Ghz÷295Ghz. Plug-in data with hmw we have energy between 12.64÷22.49eV

With μ0 the vacuum permittivity and B the magnetic induction (the magnetic flux density) for the monopole.

hmw = 7.890480167·10-11 eV·s and => (9)

Where μ0 = 1.25664⸱10-6 H/m and B = 6.2⸱10-18 T for microwave spherical symmetry half than cylindrical surface.

Link: <http://hyperphysics.phy-astr.gsu.edu/hbase/quantum/lamb.html#c2>

<http://hyperphysics.phy-astr.gsu.edu/hbase/quantum/Lamb2.html#c1>

Photons with a wavelength between UV 3nm-3µm, Infrared with cylindrical symmetry, and the condition at the limit f(R) = 0 & propagation equation (with the photon mediating particle and Energy with a series of fifth-degree order relative to ν). The photon Qanta energy relative to ν, in eV of the fifth order, is:

Eph ~ 4.135667699·10-15·ν - 1.608360432·10-35·ν2 + 9.776425634·10-51 ν3 - 4.671647404·10-83 ·ν5

I suspect that the threshold value of the wave-particle transition is related to the CMB microwave detected by Penzias & Wilson between 160.23Ghz÷295Ghz. Plug-in data with hmw we have energy between 12.64÷22.49eV =>

hmw = 1.787861873·10-10 eV·s Penzias and Wilson originally detected the Cosmic Microwave Background of 160÷285 GHz =>1.87÷1.05 mm. But we have the second solution of microwaves, almost the bottom limit of microwaves. The peak CMB has an energy between 12.6÷22.5eV and thus should be detectable. Thus, all the radiation contains a piece of CMB: X-ray at ~1.2÷2.4 Angstrom. One should see the primordial light, with UV sensors, from the beginning of time with photons at UV ~98÷55.13nm. The particle with an energy of ~12.6÷22.49eV should be detected on Radio Waves between ~2.23÷3.97Ghz or Phonon ~2.69÷5khz.

One will see the holographic picture of the Local Universe on the screen at UV ~ 98÷55.13nm.

The calculus link is below:

<http://www.michaelvio.byethost8.com/CMBPlanck.pdf>

Thus, we have the spontaneous and continuous emission of energy, the less energy emission for audions, the magnetron is bigger, and the photons are higher. Link <http://www.michaelvio.byethost8.com/PlanckBB1.pdf>

<http://www.michaelvio.byethost8.com/miu.pdf>

The light has photon-carrying particles; likewise, here are some of the “Maxwell electromagnetic” waves with carrying particles and Planck’s law associated, sorted descending by frequency:

The γ-ray with particle γ as a package of energy and wavelength below ≤ 2nm has spherical symmetry, and the condition at the limit g(2R) =0, g’(0) = R & propagation equation in a couple of Time Quanta. (with the γ particle mediating particle and Energy with one solution relative to ν).

The photons are light with a wavelength between UV & X-ray to Infrared ~3nm ÷ 30 μm with cylindrical symmetry, and the condition at the limit f(R) =0 & propagation equation speed “c” with

E ~ 4.135667699·10-15·ν - 1.608360432·10-35·ν2 + 9.776425634·10-51 ν3 - 4.671647404·10-83 ·ν5 …

Microwaves with particle microwave Pmw with a wavelength between 1.6THz ÷3GHz (~0.2mm ÷ 10cm), we have Microwaves with spherical symmetry and the condition at the limit f(2R) = 0 & speed “c” propagation equation (with the microwave mediating particle and Energy nonlinear relative to ν). hmw = 1.787861873·10-10 eV·s …

The magnetron is the electromagnetic Radio Frequency that extends within the limits of tens-hundred Hertz to ~17 GHz with cylindrical symmetry and the condition at the limit f(2R) = 0 & propagation equation speed “c”. with relation with energy nonlinear relative to ν, Em ~5.663809031·10-9 ·ν - 2.0244·10-20 ·ν2 + …

The Audion is the particle of audio sound with frequency from ~10Hz to ÷ 53kHz.with spherical symmetry. The audion with spherical symmetry and frequency below tens of kHz (with the audion mediating particle and Energy & nonlinear relative to ν). Equation f (R, t) = 0 for constant spatial distance R and g’ (0) = R and

EA = hAeν – ha1·ν2…thus, Planck’s law for the phonon, the best fit is: <http://www.michaelvio.byethost8.com/Aph.pdf>

EA ~ 0.007486790719 ·ν …

[1] Landau & Lifshitz Vol 9 Statistical Physics Cap 5 Paragraph 63 Black-body Radiation (63.4) page 18

<http://www.michaelvio.byethost8.com/Landau&Lifsh.pdf>

Propagation equation with Spherical & Cylindrical symmetry:

Link: <http://www.michaelvio.byethost8.com/Propag.pdf>

<http://www.michaelvio.byethost8.com/SphSim.pdf>

<http://www.michaelvio.byethost8.com/CylSim.pdf>

The Modified Plank’s Law for the γ Gamma-Ray (MPL.pdf) link:

<http://www.michaelvio.byethost8.com/MPL.pdf>

Thus, every physical body at the thermodynamic equilibrium emits photons in the wavelength 3nm ÷ 30μm. We have the spontaneously and continuously emitted photons at room temperature.

Every physical body at the thermodynamic equilibrium emits magnetrons in the wavelength 3KHz ÷ 18Ghz. We have the spontaneous and continuous emission of monopoles at room temperature.

Every physical body at the thermodynamic equilibrium emits audions in the wavelength 9Hz ÷ 6.3Khz. We have the spontaneous and continuous emission of audions at room temperature.

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