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Electromagnetic Interaction of Gravity. Proposal for Unified Field Theory. and 1,052mm Cosmic Microwaves Radiation From This Theory

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Abstract
From this theory arises an equation that connects Planck's constant (h), the speed of light (c), the constant of gravity (G), the constant of electricity ($K_e=1/4\pi.\varepsilon_o$) and Boltzmann's constant (k_{bl}). The important aspect in this equation is that it arrives at a function with a geometrical content in 10 dimensions of space: forces are added logarithmically. Wien's law arises from this theory as a sub-case. All black bodies have gravity in force and foundamental constants have the G constant .From the following proposals of the theory, we obtain applications with temperatures comparable to GUT and masses like the Planck mass and the inclusion of the Avogadro number and mass of the proton . At the end of the paper, using the law of Stefan-Boltzman and our function, we have results that are in agreement with MCB radiation while Wien's law is not.

The resulting mathematical solution is not the solution that can determine the relationship of the forces contained in the equation to its fullest depth. However, it is valuable as a method for developing such a solution.

Main Article
Hypotheses

1. In some point of the space, electromagnetic oscillations LC are taking place. This space is traversed by a current (i), and is equivalent to a condenser (C).This hypothesis is not obligatory but is a way for transformations of hypothesis 4 .

2. There is a mass (m) that performs an oscillation and is proportional to some electric charge (Q): Q=k.m.
In order for the mass to be positive (m>0), the constant k must have the same sign (+ or -) as the electric charge
3. We may consider that there is a mass (m) that performs a harmonic oscillation with period $T=\theta_O.2\pi.(\lambda/g)^{1/2}$, and frequency f =1/T, g: acceleration of gravity.
4. The harmonic oscillation has an oscillation constant (τ), which is proportional to the density of the electric charge and mass: $\tau = k.t$, $t = K_e.m.\rho_c$. These transformations are obligatory for this theory .
The energy of the oscillation is proportional to the square of the amplitude

$(E = (1/2).\tau.\chi^2)$, $\chi = l_c$, $\lambda=2\pi.l_c$

The acceleration of the electric charge due to the Coulomb force is equal to the acceleration of the oscillation:

$g_c=g_\chi$ and the density of the electric charge (ρ) is : $\rho_c=Q/l_c^3$.

5. In that area, the gravity and electric power are equalized at the length

$l_g = (2\pi)^{1/2}.l_c$ or $l_g = l_c$ and $m_c= Q/k =m_g$, $\pi = 3{,}14\ldots$, m_g: gravitational mass, $\theta_c.K_e.k^2.m_c^2/ l_c^2= \theta_g.G.\ m_g^2/ l_g^2$, $\theta_c = \theta_g =1$, θ_c, θ_g : constants of both interactions .

6. The quantum mechanics laws are in force : $E_{\lambda c}= n_1.N.h.c/ n_2.\lambda = \mathcal{E}.k.m.\ l_c$, with wavelength $n_2.\lambda$ and $\mathcal{E}$: the intensity of the electric field with n_1:energy level, n_2: number of waves. It should be valid that the electric energy is equal to the electromagnetic energy $E_c=E_{\lambda c}$, and that oscillation consists of an integer number of fundamental waves, λ. The density of the electric charge (ρ) is proportional to the acceleration (g), as an expansion of the Poisson's equation: $\rho_c=a.g_c$, $g_c=k.\ \mathcal{E}$, $\mathcal{E}$: for the intensity of the electric field.
7. Thermal power can be equivalent to electromagnetic with wavelength lx :
$E_{lx}= E_T$, $E_{lx}= n_1.N.k_{bl}.T=n_2.h.c/lx$, , n_1: degrees of freedom, n_2: energy level,
N: number of particles, T: temperature .

The degrees of freedom of thermal movement are equal to the quantum number of the $E_{\lambda c}$ oscillation (of that, that is equal to the electric oscillation) and the number of the waves of $E_{\lambda c}$ is equal to the quantum number of the E_{lx} oscillation that is equal to the thermal movement.

The above relations between lengths were taken in order to be in accordance with the Planck mass in the applications of mass with the Planck temperature.

The hypotheses

a) $\boldsymbol{\theta_O =1/2\pi, \theta_c =\theta_g=1}$ or
b) $\boldsymbol{\theta_O =1, \theta_c =\theta_g=1}$ (1)

These are two solutions **simply** to agree with M_{Planck}, T_{Planck} (Planck mass and Planck temperature) for $n_1=10$, $n_2=12$ and mass of proton .

Symbols

frequency (f)
condenser capacity (C)
electric potential (U_e)
potential (U_m)
electric charge (Q)
length (l)
acceleration (g)
speed of light (c)
self-induction coefficient (L)
energy (E)
force (F)
intensity of current (i)

HYPOTHESIS 1

$E = (1/2).L.i^2 \Rightarrow$ (2)

$E = (1/2).L.(Q/\delta t)^2 \Rightarrow$ (3)

$U_e. Q = (1/2).L.(Q/\delta t)^2 \Rightarrow$ (4)

$L = 2.U_e. \delta t^2 /Q$, δt = time (5)

HYPOTHESIS 2

If $Q = k.m$, let be k a constant and m the mass

From Einstein's theory $U_m= c^2$ or in low speed $v^2/2$ so

$U_m = E/m = E/(Q/k) = (E/Q).k = U_e.k \Rightarrow$ (6)

$U_e= U_m/k$ (7)

$U_e = c^2/k$ So (1) $\Rightarrow$ (8)

$L = 2.(c^2 /k).(l/c)^2 /Q = 2.c^2 . l^2 /k.c^2 .Q$ (9)

$\Rightarrow$ $L = 2.l^2 /k.Q$ (10)

l = length of current (l_i)

HYPOTHESIS 3

$T = \theta_O. 2\pi.(\lambda/g)^{1/2}$, if $\lambda= l_i \Rightarrow$ (11)

$f = 1/(2\pi.(L.C)^{1/2}) = 1/(2\pi.\theta_O(l/g)^{1/2}) \Rightarrow$ (12)

$2\pi.(L.C)^{1/2} = 2\pi.\theta_O(\lambda/g)^{1/2} \Rightarrow$ (13)

$4\pi^2.L.C = 4\pi^2.\theta_O^2.\lambda/g$, (3) $\Rightarrow$ (14)

$(2.\lambda^2 /k.Q). 4.\pi^2.C = 4\pi^2.\theta_O^2.\lambda/g \Rightarrow$ (15)

$C = 4\pi^2.\theta_O^2.k.Q/8\pi^2.g.\lambda$ (16)

λ= wavelength = length of current, This must be set with the introduction of the equation (3)

HYPOTHESIS 4

Energy is $E = (1/2).C. U_e^2$,(2) $\Rightarrow$ (17)

$E = (1/2).C.(U_m/k)^2 = (1/2).C.U_m^2/k^2 =$ (18)

$= (1/2).C.(g.\chi)^2/ k^2 = (1/2). (C.g^2/ k^2).\chi^2,$ (19)

$\Rightarrow \quad E = (1/2).\tau.\chi^2 \;, \; \boldsymbol{\tau = C.g_\chi^2/ k^2},$ (20)

χ = amplitude length, We accept this with the energy forms: $(\tau.\chi^2, g_\chi)$.

a) Law of Coulomb and Newton :

$mg_c = K_e. Q^2/ l_c^2, \; K_e = 1/4\pi.\varepsilon_o \Rightarrow$ (21)

$mg_c = K_e. k.m.Q/ l_c^2 \Rightarrow \; g_c = k.K_e.Q/ l_c^2$ (22)

if $g_c = g_\chi \Rightarrow \quad \tau = C.g_\chi^2/ k^2 =$ (23)

$C.(k.K_e.Q/ l_c^2)^2/ k^2 = C.K_e^2Q.Q/ l_c^4$ (24)

$= C.K_e^2Q.Q/ l_c. l_c^3,$ (25)

If $\rho_c = Q/ l_c^3$ then $\tau = C.K_e^2Q. \rho_c / l_c \Rightarrow$ (26)

$K_{el} =1/4\pi.\varepsilon_o$, (27)

$\tau = C.K_e^2.k.m. \rho_c / l_c$ (28)

b) The above relation can come up by the use of interactions of the energy E and the density of the electric charge.

$(E/l)=\theta.\rho_m.l_c^3.g_c=\theta.K_e.Q.\rho_c.l_c$ (29)

with $\rho_c=k.\rho_m$, (30)

θ: coefficient of shape that $\theta/V=l_c^{-3}$, V: volume and $g_c=k.\mathcal{E}$, $\mathcal{E}$: the intensity of the electric field.

MAIN TRANSFORMATIONS

let be $\boldsymbol{t_c = K_e.m. \rho_c}$ then $\tau = k.(C.K_e/ l_c).t_c$ (31)

but $C.K_e/ l_c=1$ because (32)

$K_eQ^2/ l_c^2= U.Q/ l_c \Rightarrow$ (33)

$K_eQ/ l_c = U, \; Q = C.U \Rightarrow$ (34)

$C.K_e/ l_c =1$ So $\boldsymbol{\tau = k. t_c}$ **(35)**

Law of Coulomb $F= K_eQ^2/ l_c^2 = K_e(Q.Q/ l_c^3). l_c =$ (36)

$(K_e.k.m.\rho_c). l_c=k. t_c . l_c$ (37)

so $\tau = k. t_c$, this agree by (35)quation .

(28) $\tau = C.K_e^2.k.m. \rho_c / l_c, \; t = K_{el}.m. \rho_c$, (16) $\rho_{c\lambda}=Q/ \lambda.l_c^2 \Rightarrow$ (38)

$\tau = (4\pi^2.\theta_O^2.k.Q/8\pi^2.g.\lambda).(K_e.k/ l_c). t_c =$ (39)

$(4\pi^2.\theta_O^2.k^2.Q.K_e/8\pi^2.g.\lambda.l_c). t_c$ (40)

$= (4\pi^2.\theta_O^2.k^2.Q.K_e/8\pi^2.g.\lambda.l_c^2). l_c. t_c$ (41)

for $\boldsymbol{\lambda=2\pi. l_c}$: ypothesis 4 $\Rightarrow$ (42)

$\tau = (4\pi^2.\theta_O^2.k^2/16\pi^3.g).K_e.\rho_c. l_c. t_c =$ (43)

$(4\pi^2.\theta_O^2.k^2/16\pi^3.m.g).(K_e.m. \rho_c). l_c. t_c =$ (44)

$(\theta_O^2.k^2/4\pi.F). l_c.t_c.t_c$, (45)

Let be $\boldsymbol{\beta = (\theta_O^2.k^2/4\pi.F). l_c}$ so $\boldsymbol{\tau =\beta. t_c^{\,2}}$ (46)

$(35)(46)\Rightarrow \; \boldsymbol{k = \beta.t_c}$ **(47)**

In order to be m>0 it should be Q/k>0 so $t_c/Q>0$ and $k/t_c>0$ so (35) τ>0, (47) β>0.

1. $\boldsymbol{\tau = k. t_c}$
2. $\boldsymbol{t_c = K_e.m. \rho_c}$
3. $\boldsymbol{\beta = (\theta_O^2.k^2/4\pi.F). l_c}$
4. $\boldsymbol{\tau =\beta. t_c^{\,2}}$
5. $\boldsymbol{k =\beta.t_c}$

All the above mathematical analysis is to provide a way to extract the main transformations and is not obligatory.

HYPOTHESIS 5

Since the speed at which the interaction occurs is the speed of the light, (hypothesis 2) there is no relative situations (54),(55)

1) Hypothesis 2, law of Coulomb $\Rightarrow$

$F = K_e.\ k^2.m_c^2/\ l_c^2$, for F gravity = F electricity (48)

F gravity = $G.\ m_g^2/\ l_g^2 \Rightarrow$ (49)

$K_e.\ k^2.m_c^2/\ l_c^2 = G.\ m_g^2/\ l_g^2$, (50)

Ypothesis 5.1.a) if $\mathbf{m_c = m_g,\ l_g = (2\pi)^{1/2}.l_c} \Rightarrow$ (51)

$K_e.\ k^2.\ m_c^2/l_c^2 = G.m_c^2/\ ((2\pi)^{1/2}.l_c)^2 \Rightarrow$ (52)

$2\pi.K_e.\ k^2.m_c^2 = G.\ m_c^2$ (53)

$G = 2\pi.K_e.k^2$ (54)

Hypothesis 5.1.b) if $\mathbf{m_c = m_g,\ l_g = l_c} \Rightarrow$ $G = K_e.k^2$

(55)

2) The above relation can arise by assuming the existence of the interactions of the energy E system with mass density $\rho_g = m/l_g^3$, and charge density $\rho_c = Q/l_c^3$, so $(E/l_g) = \theta.G.m_g.\rho_g.l_g = (E/l_c) = \theta.K_e.Q.\rho_c.l_c$, θ: coefficient of shape of the system, $\theta/V = l^{-3}$, $l = l_c$ or l_g and $\rho_c = k.\rho_g$. (56)

(54),(47)$\Rightarrow$ $G = 2\pi.K_e.\beta^2.t_c^2$ (57)

(55),(47)$\Rightarrow$ $G = K_e.\beta^2.t_c^2$ (58)

HYPOTHESIS 6

5.1.a) $G = 2\pi.K_e.\beta^2.\ t_c^2$, $t = K_{el}.m.\ \rho_c \Rightarrow$ (59)

$G = 2\pi.K_e.\beta^2.(\ K_e.m.\ \rho_c\ )^2 \Rightarrow$ (60)

$G = 2\pi.K_e^3.m^2.\ \rho_c^2.\beta^2 \Rightarrow$ (61)

if $\rho_c = \alpha.g_c$, $g_c = k.\mathcal{E}$, $\mathcal{E}$: is the intensity of the electric field (this will modified at calculation of parameter α

$G = 2\pi.K_e^3.m^2.g_c^2.\alpha^2.\beta^2 \Rightarrow$ (62)

$G = 2\pi.K_e^3.(E_c^2/\ l_c^2).\alpha^2.\beta^2$, (63)

E_c : electric energy since the origin of m is the parameter **t**, and arises of electricity : function (6)

$E_{\lambda c} = n_1.N.h.c/\ n_2.\lambda$, if $\mathbf{E_c = E_{\lambda c}} \Rightarrow$ (64)

$G = 2\pi.K_e^3.((\ n_1.N.h.c/\ n_2.\lambda)^2/\ l_c^2).\alpha^2.\beta^2 \Rightarrow$ (65)

$G = 2\pi.K_e^3.((n_1/n_2)^4.N^2.h^2.c^2/\lambda^2.l_c^2).\alpha^2.\beta^2$, if $lx^4 = \lambda^2.l_c^2 \Rightarrow$ (66)

$G = 2\pi.K_e^3.((n_1/n_2)^2.N^2.h^2.c^2/lx^4).\alpha^2.\beta^2 \Rightarrow$ (67)

$G = 2\pi.\ (n_1/n_2)^2.N^2.K_e^3.h^2.c^2.\alpha^2.\beta^2/lx^4$,

$lx^2 = l_c.\lambda$ (68)

5.1.b) (55) $\Rightarrow$ $G = (n_1/n_2)^2.N^2.K_e^3.h^2.c^2.\alpha^2.\beta^2/lx^4$,

$lx^2 = l_c.\lambda$

The length of the electromagnetic oscillation that is equal to the thermal movement is equal to the length of the gravitational interaction.

HYPOTHESIS 7

5.1.a) $G = 2\pi.\ (n_1/n_2)^2.N^2.K_e^3.h^2.c^2.\alpha^2.\beta^2/lx^4$, (69)

let be k_{bl} Boltzmann's constant, $E_{lx} = E_T$,

$E_{lx} = n_1.N.k_{bl}.T = n_2.h.c/lx \Rightarrow$ (70)
$lx = (n_2/n_1).h.c/N.k_{bl}.T$ (71)
The n_2 expresses the number of the fundamental waves and $n_1$expresses the degrees of freedom of the thermal movement that are possessed by n_1 quantum of $E_{\lambda c}$.

So $\mathbf{G = 2\pi. (n_1/n_2)^2.N^2.K_e^3.h^2.c^2.\alpha^2.\beta^2/((n_2/n_1).h.c/N.k_{bl}.T)^4}$ and (72)
$G = 2\pi. (n_1/n_2)^2.N^6.K_e^3.k_{bl}^4.T^4.\alpha^2.\beta^2/(n_2/n_1)^4.h^2.c^2 \Rightarrow$ (73)
$2\pi.\alpha^2.\beta^2 = (h^2.c^2.G / K_e^3. k_{bl}^4).((n_1/n_2)^{-6}.N^{-6}/T^4)$, (74)
$K_e = 1/4\pi.\varepsilon_o = 8,9875.10^9.N.m^2/C^2$ (75)
$h^2.c^2.G / K_e^3. k_{bl}^4 = 99,6895$, $(99,68955)^{1/4} = 3,1598199$ without dimensions
let be $\boldsymbol{\pi^* = 3,1598199}$ without dimensions for the time being . (76)
So $\mathbf{h^2.c^2.G / K_e^3. k_{bl}^4 = \pi^{*4}}$ **and** $\mathbf{2\pi.\alpha^2.\beta^2 = (n_1/n_2)^{-6}.N^{-6}.\pi^{*4}/ T^4}$ **(77)**

5.1.b) $\alpha^2.\beta^2 = (h^2.c^2.G / K_e^3. k_{bl}^4).((n_1/n_2)^{-6}.N^{-6}/T^4)$ (78)

CALCULATION OF THE PARAMETERS α, β, OF THE CONSTANT k AND THE VARIABLE T

a) $d\mathcal{E}/\delta x = \rho_c/ \varepsilon_0$ (Poisson function), $d\mathcal{E}$ is the differential of intensity of the electric field : $d\mathcal{E} = dF/dQ$, for $\delta x = l_c \Rightarrow$ (79)
$(dF/dQ)/ l_c = \rho_c/\varepsilon_0$, hypothesis 2 : $dQ = k.dm \Rightarrow$ $\rho_c = (dF/k.dm. l_c).\varepsilon_0$ and the differential of acceleration $dg_c = dF/dm \Rightarrow$ (80)
$\rho_c = \varepsilon_0.g_c/k.l_c \Rightarrow \boldsymbol{\rho_c = \alpha_p.g_c}$: hypothesis 6 and $\mathbf{dg_c = k.d\mathcal{E}}$ so
$\boldsymbol{\alpha_p = \varepsilon_0/k.l_c}$ (81)
b) From Coulomb's law : $F = \theta.K_e.Q.\rho_c.l$, $\theta/V = l^{-3}$ $\Rightarrow$ $\rho_c = \alpha_c.g_c$, (82)
$\alpha_c = 4\pi.\varepsilon_0/\theta.k.l$, is accepted if $l.\theta = 4\pi.l_c$ so $\alpha_c = \varepsilon_0/k.l_c$ (83)
ex. $l=3.l_c$, $\theta = (4/3).\pi$ $\Rightarrow$ $\alpha_c = \varepsilon_0/k.l_c$ (84)
The equation $\alpha_p = \varepsilon_0/k.l_c$ is assumed to agree to the next one, so hypothesis 6 will be: $\boldsymbol{\rho_c = \alpha.g_c}$, $\mathbf{dg_c = k.d\mathcal{E}}$, $\mathbf{E_c=E_{\lambda c}}$ and concerns the differential of acceleration, alteration of intensity of electric field and the differential of electrical energy . (85)
hypothesis5.1.a)

$2\pi.\alpha^2.\beta^2 = (n_1/n_2)^{-6}.N^{-6}.\pi^{*4}/ T^4 \Rightarrow$ (86)
$(2\pi)^{1/2}.\alpha.\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}/ T^2 \Rightarrow$ (87)
$(2\pi)^{1/2}.\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}/ \alpha.T^2$, (81) $\Rightarrow$ (88)
$(2\pi)^{1/2}.\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}/(\varepsilon_0/k.l_c).T^2$, (89)
$\mathbf{a = a_p}$, in order to agree at temperature applications $\Rightarrow$ (90)
$(2\pi)^{1/2}.\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}.k. l_c /\varepsilon_0.T^2$ (91)
(54) $\Rightarrow$ $k = (G/2\pi.K_{el})^{1/2}$, (47)$\Rightarrow$ (92)
$\beta = k/ t_{c\lambda} = ((G/2\pi.K_{el})^{1/2})/ t_{c\lambda}$, $t_{c\lambda} = K_e.m.\rho_{c\lambda} \Rightarrow$ (93)
$\beta^2 = G/2\pi.K_{el} (K_{el}.m. \rho_{c\lambda})^2$, $\rho_{c\lambda} = Q/\lambda. l_c^2 \Rightarrow$ (94)
$\beta^2 = G/ 2\pi.K_e(K_e.m.Q/\lambda.l_c^2)^2 \Rightarrow$ (95)
$2\pi.\beta^2 = (G / K_e^3.m^2).(\lambda^2.l_c^4/ Q^2)$ (96)
(91),(96)$\Rightarrow$ $2\pi.\beta^2 = ((n_1/n_2)^{-3}.N^{-3}.\pi^{*2}.k. l_c /\varepsilon_0.T^2)^2 =$

$(G / K_e^3.m^2).(\lambda^2.l_c^4/Q^2) \Rightarrow$ (97)

$N^{-6}.\pi^{*4}.k^2.\ l_c^2/\varepsilon_0^2.T^4= (G / K_e^3.m^2).(\lambda^2.l_c^4/ Q^2) \Rightarrow$ (98)

$T^4 = (n_1/n_2)^{-6}.N^{-6}.\pi^{*4}.K_e^3.(k^2.m^2).Q^2/ \varepsilon_0^2.G\ .\ \lambda^2.l_c^2 =$

$(n_1/n_2)^{-6}.N^{-6}.\pi^{*4}.K_e^3.Q^4/ \varepsilon_0^2.G\ .\ \lambda^2.l_c^2 \Rightarrow$ (99)

$T^4 = ((n_1/n_2)^{-6}.N^{-6}.\pi^{*4}.K_e^3/ \varepsilon_0^2.G).(Q^4/ \lambda^2.l_c^2) \Rightarrow$ (100)

$T^4 = (n_1/n_2)^{-6}.N^{-6}.1{,}38585\times10^{64}.(Q /\lambda.l_c)^2$ and (101)

$\mathbf{T =(n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/ (\lambda.l_c)^{1/2}\ ,\ \ \lambda = l_c\ \ ,\ \ a = a_p}$ **(102)**

This form gives the Wien's law , see the end of the paper , and function 171

(54) $\Rightarrow$ $\mathbf{k =(G/2\pi.K_e)^{1/2} = 3{,}43745\times10^{-11}\ C/Kg}$ **(103)**

(91) $\Rightarrow$ $\boldsymbol{\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}.k.l_c/(2\pi)^{1/2}.\varepsilon_0.T^2,\ \ a = a_p}$, (104)

hypothesis 5.1.b) $\mathbf{T =(n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/ (\lambda.l_c)^{1/2}}$ **,**

$\mathbf{\lambda = l_c\ \ ,\ \ a = a_p}$ **(105)**

temperature is the same :(102)

(55) $\Rightarrow$ $\mathbf{k =(G/K_e)^{1/2} = 8{,}6164\times10^{-11}\ C/Kg}$ **(106)**

(91) $\Rightarrow$ $\boldsymbol{\beta = (n_1/n_2)^{-3}.N^{-3}.\pi^{*2}.k.l_c/\varepsilon_0.T^2,\ \ a = a_p}$, (107)

this equation will not be affected. Equation (102) will be modified at temperature applications, 4, 5.

Because $\beta>0$ as it should be and $a>0$ and $k>0$ so $Q>0$, of course as long as $m>0$. Because the positive charges have the same sign, they are expelled and these forces are cancelled out by the attractive gravitational forces.

If it were $m<0$, k would have the opposite sign (+ or -) of Q and $t_c=K_e.\ m.\rho_c=K_e.\ m^2.k/l^3$ will have the same sign (+ or -) with k and opposite with Q. (9):$\beta>0$, (7):$\tau>0$, (102) $k>0$ so $Q<0$. The negative charges are creating repulsive forces that would be added to antigravity, so the above relations would not be valid.

APPLICATION TO THE MASSES

Because the above equations were derived using basic mathematics, it is possible to eliminate those coefficients which influence the accurate measurement of the masses, so that they may be compared with the real masses. That's why three different places are going to be chosen from the above analysis for the extraction of three different masses, and their ratios are going to be calculated. These ratios will be pure numbers. The method is going to be a simple dimensional analysis.

1. Hypothesis 2: $Q = k.m$, $Q = e =1{,}602\times10^{-19}$ C, (54) :
$k=(G/2\pi.K_{el})^{1/2} =3{,}43745\times10^{-11}$ C/Kg arises :

hypothesis5.1a) $\mathbf{m=e/k > 0 \Rightarrow}$ $\mathbf{m_{eg} =4{,}66094\times10^{-9}\ kg\ \ >\ 0}$ (108)

hypothesis5.1b) $\mathbf{m_{eg} =1{,}8594\times10^{-9}\ kg\ \ >\ 0}$ (109)

In order for the mass to be positive, $m>0$ the constant k should have the sign (+ or -) of the electric charge, otherwise it will result in negative mass and the situation of antigravity. But already it is accepted that $k>0$ and $e>0$ is the charge of proton.

2. Hypothesis 3 : oscillation period $T=1/f$ is in effect $T^2= \theta_O^2.4\pi^2.\lambda/g \Rightarrow$ (110)

$g_\lambda = 4\pi^2.\theta_O^2.\lambda/ T^2$, $T =\lambda/c \Rightarrow$ $g_\lambda = 4\pi^2.\theta_O^2.\lambda/(\lambda/c)^2$, (111) hypothesis 4: $\mathbf{g_\lambda = g_c = k.\mathcal{E}}$, (22)$\Rightarrow$ (112)

$g_c = k.\ K_e.Q/\ l_c^2 = 4\pi^2.\theta_O^2.\lambda./\ (\lambda/c)^2$,ypothesis 2 $\Rightarrow$ (113)

$k.\ K_e.k.m_c/\ l_c^2 = 4\pi^2.\theta_O^2.c^2/\lambda \ \Rightarrow$ (114)

$m_c = (l_c^2/\lambda).4\pi^2.\theta_O^2.c^2/k^2.\ K_e \ \Rightarrow$ (115)

a) for $\mathbf{\theta_O = 1/2\pi, \theta_c = \theta_g = 1}$, $\lambda = 2\pi.\ l_c$ it will be

$m_c = c^2.l_c/\ 2.\pi.k^2.\ K_{el}$, for $\mathbf{l_c = \lambda_{Planck}}$ **(116)**

$\mathbf{m_c = c^2.\lambda_{Planck}\ /\ 2\pi.k^2.\ K_{el} = 2{,}17671.10^{-8}\ kg = M_{Planck} > 0}$ (117)

b) $\mathbf{\theta_O = 1, \theta_c = \theta_g = 1}$

for $\mathbf{2\pi.l_c = (\lambda.\lambda_{Planck}/2\pi)^{1/2}} \ \Rightarrow\ \mathbf{m_c = M_{Planck} > 0}$ **(118)**

The equivalent mass of the charge is equal to the Planck mass
The relation (117) makes the GUT theory completely compatible with hypotheses 2, 3, 4.
My opinion is that hypothesis 5.1.b) is better because it agrees with an empirical type of proton , but 5.1.a) agrees with applications of the forces in the square of total energy , also hypothesis b) agrees that the forces add logarithmically, as presented at the end of this article

APPLICATION TO TEMPERATURES OF THE GUT THEORY

(102)$\Rightarrow$ $T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/\ (\lambda.l_c)^{1/2}$, $\lambda = l_c \ \Rightarrow$ (119)

$T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/\ (l_c^2)^{1/2} \ \Rightarrow$ (120)

$T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/\ (l_c^2)^{1/2} \ \Rightarrow$ (121)

$\mathbf{T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/l_c}$ (123)

1. PROTON

$T = (n_1/n_2)^{-3/2}.N^{-3/2}.1{,}085\times10^{16}.Q/\ l_c$, $\lambda = l_c = 10^{-15}.m$, (124)

$Q = |e| = 1{,}602\times10^{-19}C$ (125)

$T = (n_1/n_2)^{-3/2}.N^{-3/2}.1{,}085\times10^{16}.Q/\ l_c$, (126)

$T = (n_1/n_2)^{-3/2}.N^{-3/2}.1{,}738\times10^{12}\ K \leq\ 10^{12}\ K$ (127)

For $(n_1/n_2)^{-3/2}.N^{-3/2} \leq 0{,}575$ (128)

so $(n_1/n_2).N \geq (0{,}575)^{-2/3} = 1{,}446$ then $T \leq 10^{12}$ K (129)

This is in agreement with the theory.

2. QUARK

For $\lambda = l_c = 10^{-18}.m$ and $Q = |e|$ then

$T = (n_1/n_2)^{-3/2}.N^{-3/2}.1{,}738\times10^{15}\ K \leq\ 10^{16}\ K$, (130)

for $(n_1/n_2)^{-3/2}.N^{-3/2} \leq 5{,}754$ or (131)

$(n_1/n_2).N \geq 0{,}311$. (132)

This result is in agreement with the GUT theory, where the quark are kept in hadronians (10^{12} K, 10^{16} K)

3. particle X : $\lambda = l_c = 10^{-30}m$, $Q = |e|$ as a constant,

$T = (n_1/n_2)^{-3/2}.N^{-3/2}.1{,}085\times10^{16}.Q/\ l_c \Rightarrow$ (133)

$T = N^{-3/2}.1{,}738\times10^{27}\ K \leq\ 10^{28}\ K$ (134)

For $(n_1/n_2)^{-3/2}.N^{-3/2} \leq 5{,}754$ or $(n_1/n_2).N \geq 0{,}311$. (135)

Electroweak range (10^{16} K, 10^{28} K), Higgs bosons appear according to the theory.

4. Introducing the Planck length : $\mathbf{\lambda_{Planck}}$, there arises a temperature of the grand unification (10^{28} K, 10^{32} K).

(102)$\Rightarrow$ $T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.Q/\ (\lambda.l_c)^{1/2}$, $\mathbf{Q = |e|}$, $\mathbf{l_c = \lambda = \lambda_{Planck}}$, are valid $T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}085\times10^{16}.e/\ \lambda_{Planck} \Rightarrow$ (136)

$T = (n_1/n_2)^{-3/2}.\ N^{-3/2}.1{,}075\times10^{32}.K$ (137)

for $T \le T_{Planck} = 1{,}416\times10^{32}$ K $\Rightarrow$ (138)

$(n_1/n_2)^{-3/2}.N^{-3/2} \le 1{,}416/1{,}075 = \mathbf{1{,}31663}$ or (139)

$(n_1/n_2).N \ge 1{,}31663^{-2/3} = 0{,}832 \approx 5/6$ or 10/12, (140)

But N must be a natural number and at the unification point takes the rate 1.

For N =1 (unification point),$T = (10/12)^{-3/2}.N^{-3/2}.1{,}085\times10^{16}.\ e\ /\ \lambda_{Planck} \Rightarrow$ (141)

$T = (10/12)^{-3/2}.1{,}075\times10^{32}$ K = $\mathbf{1{,}4137\times10^{32}}$ **K** $\approx \mathbf{T_{Planck}}$, $\mathbf{n_1=10,\ n_2=12}$ **.** **(142)**

At the highest Planck temperature, the quantum number of the oscillation that is equivalent to the electric energy is the n_1=10 quantum number, equal to the degrees of freedom of the thermal movement, so n_1 expresses the size at space. The quantum number of the oscillation with the thermal movement is n_2=12 and is as much as the number of waves of λ oscillation that is equivalent to the electric.

The above relation (142)brings into agreement the GUT theory with the analysis of the hypotheses, since for the derivation of equation (102) of the temperature, all the basic equations of the analysis of the hypotheses were used.

Examination of hypotheses 6, 7 for $\mathbf{l_c = \lambda = lx}$

They could be chosen 1. E = N.hc/λ, $N.k_{bl}.T = h.c/\lambda$ 2. E = hc/λ, $N.k_{bl}.T = h.c/\lambda$ 3. E = h.c/λ, $N.k_{bl}.T = N.h.c/\lambda$. 4. E = N.h.c/λ, $k_{bl}.T = h.c/\lambda$.5. E = h.c/λ, $k_{bl}.T = N.h.c/\lambda$. 6. E = N.h.c/λ, $k_{bl}.T = N.h.c/\lambda$.

Case l,

At the **case l**, l = lx = λ, **are valid** the same with $T = 1{,}4139\times10^{32}$ K $\approx T_{Planck}$.

The equation that is contained in the analysis of hypothesis 7 will easily help the calculations below in any case with the proper change of N places .

$$\mathbf{G = 2\pi.(n_1/n_2)^2.N^2.K_{el}^3.h^2.c^2.\alpha^2.\beta^2/(h.c/N.k_{bl}.T)^4\ \ :\ N^{-6}}$$

Also $\mathbf{T= N^{-6/4}.1{,}085\times10^{16}.Q/l\ \ :\ \ N^{-3/2}}$

Case 2. The basic equation of temperatures turns (there is no N^2): $2.\pi.\alpha^2.\beta^2 = N^{-4}.\pi^{*4}/\ T^4$, temperature becomes: $T = N^{-1}.1{,}075\times10^{32}.K$ and is valid : $(1{,}31648)^{-1} = 0{,}7596 > 3/4 = 0{,}75$ so $(3/4)^{-1} = 1{,}333 > 1{,}31663$ consequently the temperature should be multiplied to 1,333, and the equation of $T = 1{,}333.1{,}075\times10^{32}.K = 1{,}433\times10^{32}.K > T_{Planck}$, **is not valid** .

Case 3. No N at the equation of temperature, the same would be valid for the fraction of degrees of freedom too. Without any N or any fraction of degrees of freedom, the temperature would be 1,31663 times smaller than the Planck temperature which **is not valid.**

Case 4. The basic equation of temperatures becomes (there is no N^4): $2.\pi.\alpha^2.\beta^2= N^{-2}.\pi^{*4}/\ T^4$, and the equation of temperature turns to: $T= N^{-1/2}.1{,}075\times10^{32}.K$ So for $N^{-1/2}$ is valid :$(1{,}31663)^{-2} = 0{,}576 > 4/7=0{,}571$ the temperature should be multiplied by $(4/7)^{-1/2} = 1{,}3228$, so $T=1{,}3228.1{,}075\times10^{32}.K=1{,}4228\times10^{32}.K$ which is much larger that T_{Planck} and **is not valid**.

Case 5. The basic equation of temperatures becomes: $2.\pi.\alpha^2.\beta^2 = N^4.\pi^{*4}/\ T^4$, and the temperature equation becomes: $T= N^1.1{,}075\times10^{32}.K$. So for N^1 is valid : $(1{,}31663)^{1} < 4/3 = 1{,}333\ 333$ so the temperature should be multiplied with 1,333, case 2 where T is bigger that T_{Planck} and **is not valid** .

Case 6. The basic equation of temperatures becomes: $2.\pi.\alpha^2.\beta^2 = N^2.\pi^{*4}/ T^4$, and the equation of temperature turns to: $T = N^{1/2}.1{,}075\times10^{32}.K$. So for $N^{1/2}$ it is valid : $(1{,}31663)^2 = 1{,}733 >$ 12/7=1,714 or < 7/4 = 1,75 so the temperature should be multiplied by $\mathbf{(12/7)^{1/2}}$ = 1,3093 or the $(7/4)^{1/2}$ =1,3228,
$T = 1{,}309.1{,}075\times10^{32}.K = \mathbf{1{,}408x\ 10^{32}.K}$, **accepted** and $T = 1{,}3228.1{,}075\times10^{32}.K =$
$= 1{,}4228\times10^{32}.K$, **is not valid** . The temperature for 12/7 fraction dimensions (with power to 1/2) approaches T_{Planck} but with a smaller approach as concerned with the fraction of dimensions 10/12 (with power to -3/2).

From the above we see the necessity of intoducing the degrees of freedom, since N is a natural number and not decimal and at the unification point, it will take the value of 1.

The degrees of freedom will be ordered as following:

a) $E = n_1.N.h.c/\lambda$, $N.k_{bl}.T = n_2.h.c/lx$, the basic equation of temperature is :
$2\pi.\alpha^2.\beta^2 = (n_2^4/n_1^2).N^{-6}.\pi^{*4}/ T^4$ so the temperature is :
$T = (n_2/n_1^{1/2}).N^{-3/2}.1{,}085\times10^{16}.|e|/ \lambda_{Planck} \Rightarrow T = (n_2/n_1^{1/2}).N^{-3/2}.1{,}075\times10^{32}.K$
For N =1 and $T = T_{Planck}$ it should be : $(n_2/n_1^{1/2}) = 1{,}31663$ η $n_1^{1/2}/ n_2 = 0{,}7596 \approx 3/4 = 9^{1/2}/4$, but as before (case 2) there will arise a temperature larger than the Planck temperature (is not valid).

b) But since the fraction of dimensions gives the larger approach to the Planck temperature when is in power -3/2, it should be at the basic equation of temperatures at the power -6.

5. Introducing the **Avogadro (N_A)** constant, to the quantity of the load, we obtain a temperature near to the large unification $T_{Planck}=1{,}416\times10^{32}$ K
If $Q = N_A.|e|$, $\lambda= l = l_e = 5{,}291\times10^{-11}$m or $l = l_e/ N_A$, Q = e then
$T = N^{-3/2}.1{,}085\times10^{16}. N_A.|e|/l_e \Rightarrow$
$T = N^{-3/2}.1{,}978\times10^{31} \leq 1{,}416\times10^{32}$ K$\Rightarrow$ $N^{-3/2} \leq 1{,}416/0{,}1978 = 7{,}158$ or
$N \geq 7{,}158^{-2/3} = 0{,}269 \approx 3/11$, For N=1 (unification point),
$T = (3/11)^{-3/2}.N^{-3/2}.1{,}085\times10^{16}. N_A.|e|/l_e \Rightarrow T=(3/11)^{-3/2}.1{,}978\times10^{31} = \mathbf{1{,}3887\times10^{32}\ K} \approx T_{Planck}$. For the fraction **3/11** are valid, the same as for the fraction 10/12. It follows that hypotheses 5 and 7 are modified in: $E = (n_1/n_2).N.h.c/\lambda$ and $n_1.N.k_{bl}.T = n_2.h.c/lx$ with the introduction of the degrees of freedom and $\mathbf{n_1=3}$, $\mathbf{n_2=11}$, in correspondence with the lower temperature from the highest at length l_e and in particles number N_A.

NATURE OF THE BASIC EQUATION AND π*

π* counted 3,1598199 without dimensions .
from the basic identity $h^2.c^2.G / K_e^3.\ k_{bl}^4 = \pi^{*4}$

$h.c = E_c.l$, E = energy, l = length, $G = E_G.l/m^2$, m = mass, Q = electrical charge
$K_e = E_e.l/Q^2$, $k_{bl} = E_T/T$, E = f.l, f = force, Q=k.m με $k = (G/ K_e)^{1/2}$

$h^2.c^2.G / K_e^3.\ k_{bl}^4 = \pi^{*4} \Rightarrow$

$(E_c.l_c)^2. (E_G.l_g/m^2)/(E_e .l_c/Q^2)^3.(E_T/N.T)^4 = \pi^{*4} \Rightarrow$ (143)

$(f_c.l_c^2)^2. (f_G.l_g^2/m^2)/(f_e .l_c^2/Q^2)^3.(f_T.l_T/ N.T)^4 = \pi^{*4} \Rightarrow l_g = 2\pi.\ l_c,$ (144)

$(f_c^2.f_G. /f_e^3 .f_T^4). (4\pi^2.Q^6.N^4.T^4/l_T^4.m^2) = \pi^{*4} \Rightarrow$ (145)

$(f_c^2.f_G. /f_e^3 .f_T^4).(4\pi^2.Q^6. N^4.T^4/\pi^{*4}.l_T^4.m^2) = 1 \Rightarrow$ (146)

$(f_c^2.f_G. /f_e^3 .f_T^4). f^{*4}=1$ and (147)

$(4\pi^2.Q^6. N^4.T^4/\pi^{*4}.l_T^4.m^2) = f^{*4}$, **f*= a remnant force** $\Rightarrow$ (148)

$$\mathbf{f_c^2.f_G^1.\ f^{*4} = f_e^3\ .f_T^4} \qquad \mathbf{(149)}$$

f_c: electromagnetic force f_G: gravitational force f_e: Coulomb force

f_T: thermal force, f*: remnant force .
Instead of forces, the above relation can be written with the form of energy interactions:

$$\mathbf{(E/l)_c^{2}.(E/l)_G^{1}.\ (E/l)^{*4} = (E/l)_e^{3}\ .(E/l)_T^{\ 4}} \qquad \mathbf{(150)}$$

The following analysis is valid for both relations in relative conditions. For practical reasons, the first relation will be used.
This can be the basis of the hypothesis that forces are added logarithmically. They are probably applied to an exponential loop.

$$4\pi^2.Q^6.\ N^4.T^{\ 4}/\ l^4.m^2= \pi^{*4}.f^{*4} \Rightarrow \qquad (151)$$

$$4\pi^2.Q^6.\ N^4.T^{\ 4}/f^{*4}.l_T^{\ 4}.m^2= \pi^{*4} \text{ and} \qquad (152)$$

$$\mathbf{f^{*}= (2\pi)^{\ 1/2}.Q^{3/2}.N.T\ /\pi^{*}.l_T.m^{1/2}} \qquad (153)$$

so $\pi^{*2}= 2\pi.Q^3.\ T^{\ 2}/f^{*2}.l_T^{\ 2}.m$ and $\pi^{*2}=(3,1598199)^2=9,9844618.Cb^3.Kelvin^{\ 2}/Joule^2.kg$ or $Cb^3.Kelvin^{\ 2}.sec^4\ /kg^3.m^4$

APPLICATIONS OF THE FORCES

From the above relation of forces, we may obtain applications of masses and energy level

$$\mathbf{f_c^{\ 2}.f_G^{\ 1}.\ f^{*4} = f_e^{\ 3}\ .f_T^{\ 4}} \qquad \mathbf{(154)}$$

f_c: electromagnetic force f_G: gravitation force f_e: Coulomb force
f_T: thermal force, f*: remnant force .
We may suppose that one solution of the above function of the forces is:

$$1.\ \mathbf{f_c^{\ 2}.f_G^{\ 1}= f_e^{\ 3}} \text{ and } 2.\ \mathbf{f^{*4} = f_T^{\ 4}} \qquad \mathbf{(155)}$$

1. In order to find the entire energy, we should count the mass of the system.

$f_c^{\ 2}.f_G^{\ 1}= f_e^{\ 3} \Rightarrow$

$$(h.c/l_c)^2\ .(G.m^2/l_g^{\ 2}) = (K_e.(k.m)^2\ /l_c^{\ 2})^3,\ \ l_g = (2\pi)^{1/2}.l_c \Rightarrow \qquad (156)$$

$$(-(2\pi)^{\ 1/2}.h.c/\ l_g)^2.(\ G.m^2/l_g) = ((2.\pi)^{\ 1/2}.K_e.(k.m)^2\ )l_g)^3 \Rightarrow \qquad (157)$$

$$\mathbf{m^4 = (h.c)^2.\ G/((2\pi)^{\ 1/2}.(K_e.k^2\ )^3\ )} \Rightarrow \qquad (158)$$

$$\mathbf{m_{cge} = 1,7209\times10^{-7}.kg}$$

We will examine if the sum of energies of interactions is valid.

The entire energy : $E_{cge} = -E_c - E_g+E_e = -f_c.l_c - f_g.l_g + f_e.l_c \Rightarrow$ (159)

$E_{cge} = (h.c/l_c - G.m^2/l_g + (K_e.(k.m)^2\ /l_c\ ),$

$\mathbf{l_g = (2\pi)^{1/2}.l_c\ \ ,\ l_c = \lambda_{Planck}}$, **(hypothesis 5.1.a)** $\Rightarrow$ (160)

$$E_{cge} = (-(2\pi)^{\ 1/2}.h.c - G.m^2 + (2\pi)^{\ 1/2}.K_e.(k.m)^2\ ).(1/l_g) \Rightarrow \qquad (161)$$

$$\mathbf{E_{cge} = A.(1/l_g)}, \qquad (162)$$

$$A = (-(2\pi)^{1/2}.h.c - G.m^2 +(2.\pi)^{\ 1/2}.K_e.(k.m)^2\ ),\ \ A = -nc - ng + ne \qquad (163)$$

$$\mathbf{nc=(2\pi)^{1/2}.h.c,\ \ \ ng = G.m^2,\ \ ne=(2\pi)^{\ 1/2}.K_e.(k.m)^2} \qquad \mathbf{(165)}$$

In order for the forces to be equally important, the A-factor must have an order of magnitude equal to 10^{-26} (h.c), so the mass should have an order of magnitude of 10^{-7} ($G.m^2$), so it should be m_{cge}. Specifically, the algebraic addition of the factors is to multiply each one with the number of the dimensions that concerns each interaction. But there is a more important reason: the A-factor must have such a value as to give n_1=10 and n_2=12.

Before this, we should calculate the value of N in the thermodynamic equations.
We consider that the system is a black body, so we have:

$n_1.N.k_b.T=n_2.h.c/l_g$ (hypothesis 7) and the force of monochromatic emission
$P = h.c/l_g.\delta t = a.\sigma.S.T^4$, (166)
$\sigma = 5{,}6704\times10^{-8}$ watt/m^2.K^4, $\delta t = l_g/c$, $S = l^2$ άρα :
$T = (n_2/n_1).h.c/l_g.k_b.N$ και $h.c^2/l_g^2 = = a.\sigma.\ l_g^2.((n_2/n_1).h.c/l_g.k_b.N)^4 \Rightarrow$ (167)
for a=1, $(n_1/n_2)^4.N^4 = a.\sigma.h^3.c^2/k_b^4 = 40{,}8 \Rightarrow$ (168)
$(n_1/n_2).N = 2{,}527$ (169)
for n_1=10, n_2 =12 $\Rightarrow$
N = 3,03 so $l_g = (n_2.h.c)/\ n_1.N.k_b.T \Rightarrow$ (170)

$$\mathbf{T.l_g = 5{,}755\times10^{-3}.m.K} \quad \mathbf{(171)}$$

This constant is the double of Wien's constant. See the end of the paper.

We notice that the number N is the index of the electric force or the sum of the indices of gravity and electromagnetic force. This supports the hypothesis that the indices are dimensions in space.

$$\mathbf{n_1.N.k_b.T = n_2.h.c/l_g = E_{cge} = A/\ l_g}\ \textbf{(hypothesis 7)}, \quad (172)$$

N=3 so $n_1=E_{cge}/N.k_b.T \Rightarrow$ (173)
$n_1=A/N.k_b.\ l_g.T$, $l_g.T = 5{,}755\times10^{-3}.m.K$. (174)
In order for the number n_1 to be $n_1\approx10$, the A-factor should be:

$$\mathbf{A = 3.(-(2.nc)^2-ng^2+(3.ne)^2)^{1/2} = 2{,}5041\times10^{-24}.J.m/kg^2} \quad \mathbf{(175)}$$

$2.nc = 9{,}9585\times10^{-25}.J.m/kg^2$, $ng = 1{,}976\times10^{-24}.J.m/kg^2$, $3.ne = 2{,}365\times10^{-24}.J.m/kg^2$
The calculations arise from ypothesis 5.1.a
if $\mathbf{A_c=A/3=(-(2.nc)^2-ng^2+(3.ne)^2)^{1/2}}$ **then** $\mathbf{E_{cge} = 3.Ac/\ l_g = 6{,}1815.10^{10}.J}$ **(176)**
So $\mathbf{n_1=A/N.k_b.5{,}755\times10^{-3} = 10{,}50}$ and $\mathbf{n_2=A/h.c=12{,}60}$, the deviation from the required prices 10 and 12 is 5% .
For $\mathbf{n_1=10}$, $\mathbf{A=2{,}383\times10^{-24}.J.m/kg^2}$ and $\mathbf{E_{cge10} = 5{,}884.10^{10}.J}$ **(177)**
$\mathbf{DE_{cge} = E_{cge} - E_{cge10} = 2{,}971.10^9.J}$ or 4,8% $\mathbf{E_{cge}}$ **(178)**

So the sum of energies is not valid, but the sum of the squares of the energies multiplied by the square of the number of the spatial dimensions of each corresponding interaction are:

$$\mathbf{E_{cge}^2 = -4.E_c^2 - E_g^2 + 9.E_e^2} \quad \mathbf{(179)}$$

$$\mathbf{E_c = -3.h.c/\ l_c,\ E_g = -3.G.m^2/\ l_g,\ E_e = 3.(K_e.(k.m)^2/l_c,\ l_c = \lambda_{Planck}} \quad (180)$$

2. $\mathbf{f^{*4} = f_T^{\ 4}}$ and $\mathbf{f^* = (2.\pi)^{1/2}.Q^{3/2}.N.T/\pi^*.l_T.m^{1/2}}$ (181)
so $\mathbf{f^* = f_T}$, for $Q = |e|$, $T = T_{Planck} = 1{,}416\times10^{32}.K \Rightarrow$ (182)
$E^* = f^*.l_T = (2\pi)^{1/2}.Q^{3/2}.N.T_{Planck}/\pi^*.m^{1/2}$ (183)
$\Rightarrow m.c^2 = (2\pi)^{1/2}.Q^{3/2}.N.T_{Planck}/\pi^*.m^{1/2}$, for $\mathbf{Q = |e|} \Rightarrow$ (184)
$N = \pi^*.m^{3/2}.c^2\ /(2\pi)^{1/2}.|e|^{3/2}.T_{Planck}$, 5.1a) , (108) : $\mathbf{m = m_{eg}} \Rightarrow$ (185)
N = 3,9713 or **N = 4** (186)
and **5.1a)** $\mathbf{E^*=4{,}189.10^8.J}$ **or 5.1b) , (109) ,** $\mathbf{E^*=6{,}632.10^8.J}$ (187)

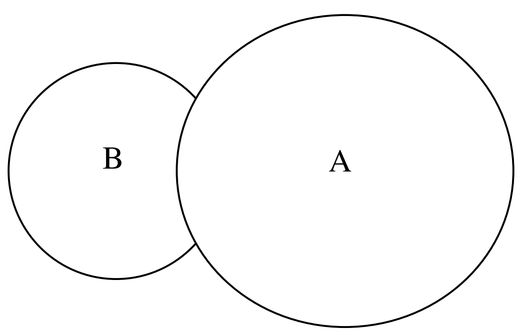
Thus, the electric energy of the remnant force is equivalent to the mass of the electric charge of the positron at the Planck temperature. The degrees of freedom of the thermal movement that is equivalent to the remnant force are 4 and correspond to the dimensions of the space.

It may be noticed that the degrees of freedom in both cases are the index of the basic force or the sum of the indices of the forces in each site of equivalency. The force of the electric charge was defined in 3 dimensions of space and remnant force in 4. This fact shows the validity of the theory and its agreement with the real data, as the degrees of freedom arose from universal constants. The forces at that situation of unification are 5, and the sum of the indices, 14. But we have already calculated $n_1=10$ as a sum of the dimensions of space and the remnant force consist of electric and thermal interactions, so these are two separate systems and thermal force is between them. The remnant force is unknown and interacts by thermal force.

The final hypothesis for the nature of equation ($h^2.c^2.G / K_{el}^3.\ k_{bl}^{\ 4} = \pi^{*4}$) is that it constitutes a fundamental relationship according to the GUT theory and it describes a relationship among the electromagnetic, gravitational, Coulomb and thermal forces. Their dimensions are as follows:

Gravitational force	: 1 dimension	(188)
Electromagnetic force	: 2 dimensions	
Coulomb force	: 3 dimensions	
Thermal force	: 4 dimensions	
Total:	1+2+3+4 = 10	
Remnant force	: 4 dimensions	

The model of unication system in temperature average Tplank-10^{12}.K is : (189)



A: $\mathbf{E_{cge} = 3.Ac/ l_g = 6{,}1815.10^{10}.J}$ (190)

A∩B: $\mathbf{DE_{cge} = E_{cge} - E_{cge10} = 2{,}971.10^{9}.J}$ 4,8% $\mathbf{E_{cge}}$ (191)

B: $\mathbf{E^{*}=4{,}189.10^{8}.J}$ (192)

Note: *electromagnetic interaction of gravity (square of energies)*

175 function A_{175}=2,5041x10^{-24}.J.m , is valid for T.lg = 5,755x10^{-3}.m.K :171 function and n_1=10,5 and n_2=12,6 , but for n_1=10 and n_2=12 , A=2,383x10^{-24}.J.m : 177 function so we call this factor A_{177}=2,383x10^{-24}.J.m
From 172,174 functions A= $n_1.N.k_b(l_g.T)$ arises in Wien's law system:
$A_{wien}= n_1.N.k_b(l_g.T)/2$ = 1,1918x10^{-24}.J.m, n_1=10 , N=3
We believe that we can use the squares of energies (179,180 functions) in variable lengths , for the atom of hydrogen (H) and proton while in former paper we used the function 179 for lengths close to Plank lengths .
The approximation in 176,178 can be zero by the following analysis **:**
Function (179) $E_{cge}^2 = -4.E_c^2 - E_g^2 + 9.E_e^2$
$E_c = -3.h.c/l_c$, $E_g = -3.G.m^2/l_g$, $E_e = 3.(K_e.(k.m)^2/l_c$, $l_g = l_c.sqrt(2\pi)$
From (158) function : m = m_{cge} = 1,7209×10^{-7}.kg and this mass comes from function 155 **:** $f_c^2.f_G^1 = f_e^3$ the relation of forces : electromagnetic , gravitational and electrical force . We rename the E_{cge} to $E_{sqrt} = sqrt(-4.E_c^2 - E_g^2 + 9.E_e^2)$
E_{sqrt} =6,5963x10^{-14}.J
From 162,172 could be : $E_{cge} = A_{175}/sqrt(2).l_c$, E_{sqrt} / E_{cge} = 1,97 or
for A_{177} sqrt(2). l_c , we have :E_{sqrt} / E_{cge} = 2,07 ,
thaus E_{cge} = 2.A/sqrt(2). l_c or
E_{cge} = A/(sqrt(2)/2). l_c = A/(sqrt(2)/2). l_c = A/cos45°. l_c
so $\mathbf{E_{cge} = A/cos45^o. l_c}$

EMPIRICAL TYPES (inclusion of the Avogadro number)

There is an empirical relation that connects the quantities :
M_{Planck}, N_A: Avogadro number, , l_g (length of gravity interaction)=$\lambda_{Planck}.(2\pi)^{1/2}$.
l_e=5,291×10^{-11}.m

$$(m_{eg}.l_e^2 .N_A^{-2} + M_{Planck}.l_g^2)/2 = p.(m_{eg}.M_{Planck})^{1/2} .l_e.l_g. N_A^{-1}$$

$$p=1,0000086 \qquad (193)$$

The quantities m.l^2 are moments of inertia and the second member contains a middle rate of moment of inertia. The average is equal to geometric average so:

$$m_{eg}.l_e^2 .N_A^{-2} = M_{Planck}.l_g^2$$

$$m_{eg} > 0, \ M_{Planck} > 0 \qquad (194)$$

This m_{eg} is of hypothesis 5.1a)
From the above relation we obtain the length : $\mathbf{l_e/N_A}$=8,788×10^{-35}.m

The tendency of inactivity of the equivalent mass of the electric charge of the electron at the length of the electric charge l_e is equal to the tendency of inactivity of the Planck mass. This relation makes hypothesis 2 compatible: Q=k.m with the GUT theory.
The interesting part of the above relation is that though the Planck mass presupposes temperatures that do not occur in our empirical world, m_{eg} as an equivalent mass of the charge of the electron, is valid everywhere. Even the neutral particles may be considered to have mutual-confutation charges and the same is valid for each point of a field that can create mutual-confutation particles. The taking from the space of m_{eg} transfers the unification relations to the compatible space of the observed particles.

Empirical form of angular momentum that is relevant to the mass of proton.

$$(N_A.m_p.\,(m_{eg}/(2\pi)^{1/2}))^{1/2}.c.\,\lambda_{plank} = p.10.h,\quad p = 1{,}0065$$

$$m_{eg} > 0 \qquad (195)$$

This $(m_{eg}/(2\pi)^{1/2}$ is m_{eg} of hypothesis 5.1.b

m_p=mass of proton, l_g (length of gravity interaction)=$\lambda_{Planck}.(2.\pi)^{1/2}$.

Since m_{eg} contains the constant k of hypothesis 2, which means that it has a real existence in the above formation of angular momentum of the proton

Sep. 30, 2006: Anyone would be confused by π* , and will think that it is π, but it uses the S. I. System of units. S.I is a chemical system linked to Avogadro's number and hydrogen . The interesting thing is that I found a relation with Avogadro's number and the proton and the length of charge. I do not have any proof whether π* is π and how the units come to this constant .

This paper in conclusion says that the model of unification includes two separate systems in an asymmetry position and in interaction. The systems are not independent and must interact. Really, there is a 5% divergence of energy in one system, that may relate to the two systems. The first system has the three forces that we know in our world: electromagnetic, gravity and electricity. The second system has the known thermal energy and an unknown that I call a remnant force. The thermal force pushes the system and the remnant attracts the system. The first system has 6 dimensions of space and the second 8 dimensions of space.

On the other hand I found the division of 10/12. The 12 I believe, consists of the two dimensions of time and my belief comes from my book on philosophy and not from my paper.

In the temperature of the proton oscillation we must use length 1fm or 1fm/sqrt(2.π) and the division of n1/n2=10/12 , N=1, we need to verify if n1=3 and n2=4 in some experiment. If that happens, there arises that in Planck's temperature, the n2=12 must consist of 2 dimensions of time.

The most interesting thing in the calculations of the paper is that we can verify by experimental or by observing a spectrum. The empirical form of angular momentum and the energies gives us the potential for calculating spectra.

1,052mm cosmic microwave background radiation from unified theory

The proof of the theory

The relation of length and temperature incites us to examine whether the system works at low temperarures T.lg = 5,755X10$^{1/2}$ ^-3.m.K . The system seems to work at the Planck temperature as the proton's temperature in a range between 10^{32} .K- 10^{12} .K - why not lower even at temperature than these ?

It is interesting that we can get values near the cosmic irradiation (CMB). line 171 of paper

T.lg = 5,755X10^{-3}.m.K , this constant is the double the Wien constant (1893)and it is the same for N=6 .

lg=sqrt(2.π).lc ,

n1/n2=10/12 , N=3 if lg=1mm then T=5,75K

if radiation comes from lc=1mm Then T=2K

The constant of Wien is half and for lg=1mm , T=2,73K in Wien's law

Function 102 in the paper gives the Wien's law for
Wien constant = constant102/2.sqrt(2π)
for N=1 , n1/n2=10/12
sqrt(2.π) comes from values of length λ=lc=lg/sqrt(2π).

the functions 102 and 171 are not the same but they give the same constant for N=1 (102)and N=3 (171)

in function 171
constant171=2.constant of Wien's constant
also the law of Stefan-Boltzman for P/S = $1,9X10^{-3}$.w/m2 , function 166 , gives 13,52K then in function 171 , l=0,42mm
if l=lc=0,42mm then lg=sqrt(2π)=1,052mm , the cosmic bachground radiation (CMB). We get the same results by using 102 function with N=1

The mathematical error of approximation will be in any method sqrt(2π)=N.(n1/n2), N=3,n1=10,n2=12

Using the law of Stefan-Boltzman , function 102 or 171 for an appropriate length and N we have results in agreement while Wien's law cannot .
Wien's law is a case without gravity but has gravity . Gravity affects to Wien's law and calculations are in desegreement with the law of Stefan - Boltzman

the function 102 also gives the Tplank for lplank without sqrt(2π). Wien's constant is not valid .

In conclusion all black bodies in nature seem to have n1=10 and n2=12 numbers and gravity is not zero

If that happens, the extra dimensions exist around us

Two more empirical types of angular momentum that do not exist in the paper and give us the potential of meg existence , are :
meg of 5.1a), line 108 of paper
π=3.14..,c:velocity of light ,lplank:length of plank , h: plank constant , le:length of charge $5.29x10^{-11}$.m , Na:avogadro's number

a) 2π.(5meg).c.lplank/h=1.071 **(196)**
2π.(6meg).c.(le/Na)/h=6.986 **(197)**

function is analysed as (7/6)J=(2/3)J+(1/2)J **(198)**
These empirical types will give us the potential of spectrum verification .

All the method includes a mathematical extraction of Stefan-Boltzman(T4) or Wien low of irradiation of a black body

END

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