THE PARADOX OF THE HAWKING THEORY

My book : Modified Hawking Field .Metrical analysis in cosmology
ISBN 978-3-8433-6512-3
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It is known that the Hawking-Bekenstein theory about black holes contains two basic equations. One of the equations is that of Bekenstein (1972) which correlates the surface of the horizon of a black hole to the mass of a black hole. Specifically, the surface is proportional to the square of the mass. The other equation is Hawking's (1971) which connects the temperature of the horizon of a black hole with the mass. Temperature is inversely proportional to mass. These theories correlate fundamental theories of physics: the general relativity theory (not completely proven, due to our ignorance about gravity), quantum, thermodynamic and mechanical theory.

The paradox lies in the fact that no astronomical body gave the Hawking radiation or else the temperature which is monstrously $10^{-14}\,Kelvin$ small, weaker than the temperature of the universe, as Susskind protests in his recent book (2011).

Sagittarius A*

Contemporary astrophysics has understood and photographed very dense objects, neutron stars. There has never been observed any body more dense than these, and the name black holes is attributed to them, without being able to confirm the Hawking-Bekenstein equations. The temperature(T) detected is much greater than $10^{-14}\,K$. Kelvin and corresponds to X-ray and γ radiation. However, it is believed that it comes from clouds around the horizon rather than the horizon itself.

Μάζα Sagittarius A* (m) : $1.2\text{x}10^{42}\,kg$ and for Black Hole BH $8.2\text{x}10^{36}\,kg$

Radius (lc) : $5\text{x}10^{14}\,m$ and for BH $22\text{x}10^{9}\,m$

Using the above values in the equation of page 48 which gives the temperatures of the cores of the stars, the result is temperature(T) similar to the one observed.

Radiation (T): $9.1\text{x}10^{6}\,Kelvin$ or $6A^{0}$ and for BH $5.8\text{x}10^{9}\,Kelvin$ or 0.5MeV

(55) $$m=\frac{8.928\text{x}10^{-4}\,V\,T^{2}}{\theta_{v}\,l_{c}} = \frac{8.928\text{x}10^{-4}\,l_{c}^{3}\,T^{2}}{l_{c}} = 8.928\text{x}10^{-4}\,l_{c}^{2}T^{2} \qquad (1)$$

$$T=\sqrt{(\frac{M_{SagitA}}{(8.928x10^{-4}l_c^2)})} \quad = \quad 7.33x10^7\,Kelvin \quad \text{, for BH} \quad 4.35x10^9\,Kelvin$$

COLLIDERS

This equation also gives the crushing length(lc) of the particles in the buffers. This is not odd because the crushing length(lc) corresponds to the wave formed on the particle which receives the energy of the collision (mass m). The particle becomes a crushing length sized star.

(1) arises $l_c=\sqrt{(\frac{M_{collision}}{(8.928x10^{-4}T_c^2)})}$ (2)

For $M_{collision}=7TeV/c^2$ and $10^{11}\,Kelvin$ arises $l_c=10^{-21}m$

Read also the paper about Colliders : http://wbabin.net/files/4570_alexandris2.pdf

HAWKING THEORY

But what is the connection to the Hawking's theory?

If we correlate the above equation with the two Hawking-Bekenstein equations we might solve the paradox of the black hole temperature(T).

On the equation of page 48 which gives the temperature(T) of the core of the stars we put the Planck temperature and the mass of Sagittarius A*(MsagitA). The result is the radius of an atom, which is very small.

(2) arises $M_{SagitA}=8.928x10^{-4}l_c^2T_{plank}^2$ then $l_c=\sqrt{(\frac{M_{SagitA}}{(8.928x10^{-4}T_{plank}^2)})}$ (3)

$l_c=2.58x10^{-10}m$, for BH $l_c=6.76x10^{-13}m$

If this length is imported as a horizon radius of the black hole facts we will take the mass(M_B) of the black hole in the Bekenstein equation.

This mass in the Hawking equation(M_B = M_H) will give the Hawking radiation(T_H) which is about 12-20 times smaler than the observed.

Radius of Orizon of Black Hole of Bekenstein's function : $R_S^2=\frac{4G^2M_B^2}{c^4}$

Rs = lc

$$M_B=1.74\text{x}10^{17}\,kg \quad \text{, for BH} \quad M_B=4.55\text{x}10^{14}\,kg$$

Radiation of Black Hole of Hawking's function : $T_H=\dfrac{hc^3}{16\pi^2 k_B G M_H}$

$M_B = M_H$

$$T_H=7\text{x}10^5\,Kelvin \quad \text{, for BH} \quad T_H=2.7\text{x}10^8\,Kelvin$$

This is the way that a paradox seems to be solved, but there is another one added. The black hole has a size of an atom . Mass M_B must be singularity.

The theoretical paradox of the Hawking theory

The general theory of relativity which is the gravity theory has given little evidence for 100 years, such as gravitational lenses galaxies. There has not, however, been proven that inertia is equivalent to gravity, or that acceleration of bodies produces gravitational waves.

For the same reason we do not yet accept that collisions of bodies and particles enhance gravity.

In a few words we have not understood the nature of gravity. In the existing weakness of general relativity the Hawking theory introduces another assumption, that general relativity which applies in the macrocosm also applies in the region of quantum phenomena. Thus, either quantum effects apply in the macrocosm, or general relativity applies in the microcosm. The above calculations give an explanation. The great mass regards general relativity and small length of the black hole regards quantum. Therefore, perhaps the two theories become compatible. Although, we must not forget that paradoxes of black holes started from mechanics long before the appearance of relativity.

Paradox says that the escape velocity in a heavy body can reach the speed of light, so the star will be dark. In fact it will be so dark that it will also be completely cold. The latter has been a matter of controversy for the past 40 years. The problem is that it is not certain that a law of mechanics applies everywhere and in the same way. For example, logically it is not prohibited that the escape velocity is always less than the speed of light, so that the light escapes always.

Interesting correlations to the Hawking's theory

A mass near the Planck mass was introduced in the book theory, $M_{eg5.1a}$. This mass indicates that the mass retained by the Coulomb force by a positive charge. This means that this mass is the building block of the cores of the stars. Around a positive charge is gravitationally concentrated a big mass 5 times bigger than Hawking's mass $4.85\text{x}10^{17}\,GeV/c^2$. This mass is introduced in the equations. Hawking mass as a constant. A corresponding mass before the appearance of quantum was the Stoney (1874) mass which was corresponding to the equivalence of gravitational force with the electrical power of Coulomb. The Stoney mass is 2 times the Hawking mass and is 2.5 times smaller than $M_{eg5.1a}$. Stoney mass was rejected by quantum because it was giving a wavelength shorter than the Planck length. However, in an empirical type of this book this mass may be compatible to quantum in the future, page 30.

The ratio of the squares of the Planck mass to the Hawking mass gives the coefficient $64\pi^2$. The ratio of these squares of these masses as shown on page 39 can amount to a fine structure constant particle, i.e. to be an angular momentum coefficient.

Also, the coefficient $64\pi^2$ was found to may also be an emission surface coefficient of the background radiation CMBR, page 38. These relations may suggest the ability of unification of general relativity with quantum, the unification of microcosm with the macrocosm, which was Weeler's request (who gave the name of black holes).

Another interesting relation is that between the modified law of Wien, page 5,34,35 for the Coulomb (lc) length and the Hawking and Bekenstein-Kerr equations.

Modified constant of Wien law:

$$W_C = T\, l_c = 2.28\text{x}10^{-3}\, m\, Kelvin \qquad (4)$$

page 5 , function (8),page 20 , function (102) Q = e , page 35

Product of Hawking temperature (T_H) and of fact horizon radius of black holes in Bekenstein-Kerr equation ($R_{orizon} = R_s$) :

$$\frac{W_C}{T_H R_{orizon}} = 5 \qquad T_H R_{orizon} = 4.567\text{x}10^{-4}\, m\, Kelvin \qquad (5)$$

Number five is the square root of the surface coefficient of horizon or else the surface coefficient is 25. Once again the surface coefficient matches with a fine structure constant of a particle which I named Higgs meson , pages 40, 46, functions (40, 43) with corrections:

$$\frac{5\sqrt{(a_p)}\,E_e}{N_A \lambda_{plank}} = \frac{Mp+Me}{l_e} \qquad (5)^*$$

The serious problem of proving the Hawking theory has already been shown. By my algebraic analysis the ability of proving exists in the rotation of stars because it is observable as their magnetic field.

Solar Dynamo

The equations resulting from the assumptions can extract the rotation of stars and in particular of their cores, specifically the first 40 equations. Regarding the Sun's rotation of the core it is 10 times faster than the surface, page 56. The fact that rotation concerns the core is shown by the fact that the same equations give the core's temperature of sun $7\text{x}10^7\,Kelvin$, page 48. Confirmation of equations and of coefficients is very important for the rest part of the project. The coefficient of the equations selected so that they match with the empirical cosmological types. For the calculation of the magnetic field(B) the equation which gives the force is selected Laplace(F):

$$F=B\,I\,l_c \quad \text{then} \quad F\,l_c=B\,I\,l_c^2 \quad \text{so} \quad E=B\,I\,l_c^2 \quad \text{arises} \quad B=\frac{E}{(I\,l_c^2)} \qquad (7)$$

The calculations of page 56 should be modified in order to take into account that the core of the sun has radius the 1/5 of the sun and that currents are not rectilinear but circular.

$$(7) \text{ arises} \quad B=\frac{E}{\left(I\left(\frac{2\pi l_c}{5}\right)^2\right)} \quad \text{with} \quad I=2\text{x}10^7\,Ampere \qquad (8)$$

Energy (E) is proportional to the square of the angular speed, like the Laplace force: E ≈ ω^2

The product $I\,l_c=Q\,\upsilon$, speed (υ) is proportional to the angular speed (ω), thus the intensity of the magnetic field (B) is proportional to the angular speed ω.

$$\text{B} \approx \frac{E}{\omega} \quad \text{so} \quad \text{B} \approx \frac{\omega^2}{\omega}=\omega \qquad (9)$$

Therefore, the magnetic field's (B) intensity is inversely proportional to the rotation period (T), $\omega=\frac{1}{T}$

If the rotation of the surface is 10 times smaller, and therefore the magnetic field will be 10 times smaller, i.e. 44Gaus/10 = 4.4Gauss.

This verification shows that the coefficients of equations 1-47, pages 14-17 were selected properly. This verification enhances the accuracy of the temperature equation of the core of the star which is extracted from the same equations, pages 47-48. It is the equation that agrees with the radiance of Sagittarius A* and it is combined with the Hawking-Bekenstein equations. It also gives very good results to the collider regarding the length of particle breakage.

The special feature of the constant (CR) which gives the solar nuclear rotation of the star is that it depends on the constant $k_{5.1a}$ and not on the classic constant $k_{5.1b}$ of Stoney.

I should remind that the quotient of the electrical charge to the $k_{5.1a}$ gives $M_{eg5.1a}$ which is associated to the Planck mass and the Hawking and Stoney masses. The verification of the constant $k_{5.1a}$ is fundamental for the analysis of the book.

$$CR=\frac{4\pi\sqrt{(8\pi^3\varepsilon_0)}}{k_{5,1}a} = \frac{4\pi\sqrt{(8\pi^3\varepsilon_0)}}{\sqrt{(2G\varepsilon_0)}} = 4\pi\sqrt{(4\frac{\pi^3}{G})} = 8\pi\sqrt{(\frac{\pi^3}{G})} = 1.713\text{x}10^7\,K\,m^{(2/3)}kg^{-2}$$

page 5 , function(7) , page 56 must correct

Here it seems that this constant has the 8π for the relativistic base. However it has emerged by a metric analysis without the use of general relativity. The acceptance of this constant happened because it was in agreement with the empirical cosmological types and the background radiation CMBR.

The mathematical model of the first 47 equations is the plasma model with electric currents (I), capacitor situation, insulators (C) and inductance currents (L).

This model is an Alvfen-Carlqvist type (1967) and a Stepanov-Zaitsen type. However the equations of Ohm were bypassed in order to not have talgebraic sum. That is, endpoint equations, where every physical quantity takes the maximum value and then when it is zeroed it is all converted into another physical quantity.

CONSTANTS OF THEORY

Modified pseudsostatic constant $k_{eg5.1a}$ = $\sqrt{(2G\varepsilon_0)}$

$M_{eg5.1a}$ = $\frac{e}{\sqrt{(2G\varepsilon_0)}}$ = $4.66\text{x}10^{-9}kg$

Clasic constant $k_{eg5.1b}$ = $\sqrt{(4\pi G\varepsilon_0)}$

Stoney's mass $M_{eg5.1b}$ = $\frac{e}{\sqrt{(4\pi G\varepsilon_0)}}$ = $1.8594\text{x}10^{-9}kg$

Plank's mass M_{plank} = $\sqrt{(\frac{hc}{2\pi G})}$ = $2.176\text{x}10^{-8}kg$

Hawking's mass M_H = $\frac{hc^3}{(16\pi^2 k_B G T_{plank})}$ = $8.66\text{x}10^{-10}kg$

Notes

(*) more about messon of Higgs , corrections of my book

ap is the fine structure of proton , so we can make the hypothesis that

1/25 is the fine structure of mass of E0

So mass is : $E_0 = 160.94\, MeV/c^2$

have spin 2 : spin of proton +spin of electron = $\frac{3}{2}+\frac{1}{2}=2$

and fine structure 1/25

Angular momentum of E_0 *:* $E_0 c\, l = 25 \frac{h}{2\pi}$

l= 31.03 fermi

**Polonio 214 Rc=30fermi , 210 Rc = 43.7fermi , 218 Rc=38.7fermi , α-nuclear division of 238U ,,Po to Pb*

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19 April 2012