Consequences of the Gravitational Red Shift of a Moving Gravity Well on The Electric Permittivity of the free space

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1-Abstract:

To explor the effect of the gravitational red shift of a gravity well on the electric permittivity of the free space then to expand this towards the collaboration between schwarzschild metric and lorentz transformation on electric permittivity of the free space under the unflonce of a moving gravity well .

2-Introduction:

According to Einstein in his scientific research titled as [On the Inflounce of Gravity on the Propagation of Light] pupleshed in Annalen of Physiks #35 in June 1911

For a photon coming from the sun to earth then equation [3] in that reseach states

$$c = c'\left(1+\frac{\Phi}{c^2}\right); \Phi = -\frac{MG}{r} \therefore\Rightarrow c = c'\left(1-\frac{MG}{r\,c^2}\right)$$

$$\therefore\Rightarrow c' = \frac{c}{\left(1-\frac{MG}{r\,c^2}\right)} \quad \therefore\Rightarrow c' = \frac{1}{\left(1-\frac{MG}{r\,c^2}\right)\sqrt{\varepsilon_\circ \mu_\circ}}$$

Where

$$\text{c is the speed of light}\;;\; c = \frac{1}{\sqrt{\varepsilon_\circ \mu_\circ}},,,\, c' \equiv \text{ the speed of light near a big gravity well },$$

$$G \equiv \text{gravitional constant}, r \equiv \text{radius of the gravity well}$$

What Einstein saying here is that the speed of light is bigger near by a gravity well he is saying clearly speed of light in vacume is infleounced by gravity and this is one of his best works ever infact in this peaper he predected and calculated gravitional lensing

However Einstein miss calculations by some factors as Schwarzschild showed with his metric.

3-The effect of the gravitational wave lenght shift on electric permittivity of the free space $(\varepsilon_\circ)$:

Let's consider a photon with wave length equal to $(\lambda_\circ = r - r_s)$ falling from infinty towards a gravity well then it should have a gravitational wave lenght shift as folow.

$$\therefore\ \lambda_{\circ} = \lambda\left(1 - \frac{r_s}{r}\right)^{\frac{1}{2}}$$

Since $\left(\lambda = r - r_s = R_{\circ}\right)$and it's get blue shifted $(\lambda_{\text{blue shifted}} = r' - r_s = R) \therefore \Delta\lambda = r - r'$

since r, r', r_s all are fixed points in space

This means the wave length itself get shortened and this is not some sort of relativ effect like relative Doppler effect rather than gravity effected spase-time and this will change the basic properties of empty space itself near by this gravity well and this is compatible with both Einstein and Schwarzschild interpretation to the gravitational redshift phenomenon it's the same effect of gravitational tidal elongation effect.

Infact this effect will change both electric and magnetic fildes since that both have a geometrical characterization in there discription then both will be effected by this phenomenon exerted by a gravity well the same way it change the wave length.

Since the electric flux is an area description and not in one dimension then we should use $\left(R_{\circ}^{2} = R^2\left(1 - \frac{r_s}{r}\right)\right)$ because for one dimension we use $\left(R_{\circ} = R\left(1 - \frac{r_s}{r}\right)^{\frac{1}{2}}\right)$

$$\therefore\Rightarrow \Phi_E = E4\pi R^2 \quad \therefore\Rightarrow \Phi_E{}' = \frac{E4\pi R^2}{\left(1 - \frac{r_s}{r}\right)}$$

Electric flux get destorted due to gravitonal effect and since the electric charge is conserved then this will effect the electric permittivity of the free space $\left(\varepsilon_{\circ}\right)$

$$\because\ \varepsilon_{\circ} = \frac{q}{\Phi_E} = \frac{q}{E4\pi R^2}$$

$$\therefore \text{ under gravity} \Rightarrow \varepsilon' = \frac{q}{E\frac{4\pi R^2}{\left(1 - \frac{r_s}{r}\right)}} \Rightarrow \varepsilon' = \varepsilon_{\circ}\left(1 - \frac{r_s}{r}\right)$$

This dose not applied on magnetic permeability of the vacuum since it's fully geometrically characterized entity

$$\because \; \mu_\circ = \frac{B}{H} \; \therefore H = \frac{B}{\mu_\circ} \; \therefore\Longrightarrow H = \frac{\left(\frac{B}{\left(1-\frac{r_s}{r}\right)}\right)}{\mu_\circ} \; \therefore\Longrightarrow \; \mu_\circ{}' = \frac{\left(\frac{B}{\left(1-\frac{r_s}{r}\right)}\right)}{\frac{\left(\frac{B}{\left(1-\frac{r_s}{r}\right)}\right)}{\mu_\circ}} \therefore\Longrightarrow \mu_\circ{}' = \mu_\circ$$

Speed of light is not a vector quantity it's a scalar quantity it's independent on the direction of the moving source nor the observer it's only dependent on the nature of the empty space itself

$$\therefore\Rightarrow c' = \frac{1}{\sqrt{\varepsilon_\circ \mu_\circ \left(1-\frac{r_s}{r}\right)}} \therefore\Rightarrow c' = c\left(1-\frac{r_s}{r}\right)^{-1/2}$$

Since electric flux get distorted due to graviton effect and since the electric charge is conserve then this will affect electric permittivity of the empty space itself $(\varepsilon_\circ)$ and the speed of light in vacuum because due to gravitational effect speed of light near a black hole or any gravity well with a consedrable a mount of graviton effect will get increased so that our photon will keep falling towards the black hole and event horizon will always keep running away until it reach singularity

$\therefore\Rightarrow \; r > r_s$ this is always nomatter what $1 > \frac{r_s}{r}$

So that the Schwarzschild metric will be always valid all the way to the singularity so that the event horizon itself is the singularity at the center of the black hole

$$\because c' = \frac{c}{\sqrt{\left(1-\frac{r_s}{r}\right)}}$$

Schwarzschild metric for a non-rotating black hole is as folow

$$\therefore ds^2 = \left(1-\frac{r_s{}'}{r_s}\right)c^2dt^2 + \frac{dr_s{}^2}{\left(1-\frac{r_s{}'}{r_s}\right)}$$

$$\because \text{at event horizon } \left(1-\frac{r_s{}'}{r_s}\right) \to 0 \therefore\Longrightarrow ds^2 = \frac{dr_s{}^2}{\left(1-\frac{r_s{}'}{r_s}\right)}$$

since spacetime anomaly at event horizon is restricted to event horizon area with zero time because of the gravitational time dilation

$$\therefore\Longrightarrow ds^2 = \frac{{dr_s}^2}{\left(1-\frac{{r_s}'}{r_s}\right)} = 4\pi\, {r_s}'^2$$

$$\because\ \left({dr_s}^2\right) = dr_s.dr_s \ \therefore\Longrightarrow \frac{dr_s.dr_s}{\left(1-\frac{{r_s}'}{r_s}\right)} = 4\pi\, {r_s}'^2 \ \therefore\Longrightarrow \frac{dr_s.dr_s}{\left(1-\frac{{r_s}'}{r_s}\right)4\pi\, {r_s}'^2} = 1$$

$$\therefore\Longrightarrow \frac{dr_s}{2\sqrt{\pi}\, {r_s}'\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}} = 1$$

$$\text{By integration} \Longrightarrow \frac{\ln\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}+1\right)+2r_s\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}\right)-\ln\left(\left|\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}-1\right|\right)}{4\sqrt{\pi}} + C = r_s + D$$

let C=D

$$\therefore \ln\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}+1\right) - \ln\left(\left|\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}-1\right|\right) = 4\sqrt{\pi}\, r_s - 2r_s\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}\right)$$

$$\frac{\left(\sqrt{1-\frac{{r_s}'}{r_s}}+1\right)}{\left(\left|\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}-1\right|\right)} = e^{\left(4\sqrt{\pi}\, r_s - 2r_s\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}\right)\right)}$$

$$\frac{\left(\sqrt{1-\frac{{r_s}'}{r_s}}+1\right)}{\pm\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}-1\right)} = e^{\left(4\sqrt{\pi}\, r_s - 2r_s\left(\sqrt{\left(1-\frac{{r_s}'}{r_s}\right)}\right)\right)}$$

At singularity

$$\text{at } {r_s}' \to 0 \Longrightarrow\ {r_s}' = r_s \ \therefore\Longrightarrow \left(1-\frac{{r_s}'}{r_s}\right) = 0$$

$$\therefore\Longrightarrow \pm 1 = e^{\left(4\sqrt{\pi}\, r_s\right)} \begin{cases} 1 \ \therefore\Rightarrow e^{2i\pi} = e^{4\left(\sqrt{\pi}\right)r_s} \ \therefore\Longrightarrow r_s = i\dfrac{\sqrt{\pi}}{2} \\ \text{or} \\ -1 \ \therefore\Rightarrow e^{i\pi} = e^{4\left(\sqrt{\pi}\right)r_s} \ \therefore\Longrightarrow r_s = i\dfrac{\sqrt{\pi}}{4} \end{cases}$$

$$\because\ r_s > r_s' \therefore\Longrightarrow r_s = i\frac{\sqrt{\pi}}{2}\ ,,,r_s' = i\frac{\sqrt{\pi}}{4}\ ;\ i\frac{\sqrt{\pi}}{2} \& i\frac{\sqrt{\pi}}{4} \equiv \text{ratio radii not actual radii}$$

I will call the short ratio radius $\left(r_T = \ i\frac{\sqrt{\pi}}{4}\right)$ as (T) ratio radius

$$\because\ r_s > r_s' \therefore\Longrightarrow r_s = i\frac{\sqrt{\pi}}{2}\ ,,,r_s' = i\frac{\sqrt{\pi}}{4} \therefore\Longrightarrow \frac{r_s'}{r_s} = \frac{i\frac{\sqrt{\pi}}{4}}{i\frac{\sqrt{\pi}}{2}} = \frac{1}{2}$$

$$\text{at } r_s' \to 0\ \therefore r_s = r_s'; c_s' \to c; dr_s{}^2 = r_s'.r_s'$$

$\because$ the photon geodesic is a null curve

$$\therefore\Longrightarrow\ ds^2 = 0\ \therefore\Longrightarrow \left(1 - \frac{r_s'}{r_s}\right) dt_s{}^2 = \frac{dr_s{}^2}{c^2\left(1 - \frac{r_s'}{r_s}\right)}\ \therefore\Longrightarrow dt_s{}^2 = \frac{dr_s{}^2}{c^2\left(1 - \frac{r_s'}{r_s}\right)^2}$$

$$\therefore\Longrightarrow\ dt_s{}^2 = \frac{r_s'.r_s'}{c^2\left(1 - \frac{r_s'}{r_s}\right)^2}$$

$$\therefore ds^2 = -\left(\left(1 - \frac{1}{2}\right)c^2\frac{r_s'.r_s'}{c^2\left(1 - \frac{1}{2}\right)^2}\right) + \left(\frac{r_s'.r_s'}{\left(1 - \frac{1}{2}\right)}\right)$$

$$\therefore ds^2 = -\left(\frac{r_s'.r_s'}{\left(1 - \frac{1}{2}\right)}\right) + \left(\frac{r_s'.r_s'}{\left(1 - \frac{1}{2}\right)}\right)$$

$\therefore$ at singularity $\Longrightarrow ds^2 = 0$

since $r > r_s' > 0 \therefore\Longrightarrow r_s - r_s' \neq 0 \therefore\Longrightarrow \Delta r_s \neq 0$

$$\because c' = \frac{c}{\sqrt{\left(1 - \frac{r_s}{r}\right)}} \therefore r > r_s'$$

$\because 0 < \frac{r_s}{r} < 1 \therefore\Longrightarrow$ chaing in position $\neq 0 \therefore\Longrightarrow r - r_s' \neq 0 \equiv$ uncertainty in position

This is only happened in the uncertainty principle

$$\therefore\Longrightarrow \triangle r_s \triangle P_s \geq \frac{\hbar}{2}$$

This is very reasonable since we are reaching such a tiny scale

$$\therefore i\frac{\sqrt{\pi}}{4} = \frac{2MG}{c^2} \therefore\Longrightarrow M = ic^2\frac{\sqrt{\pi}}{8G} \text{ ; for local observer } c' = c$$

$$;\ r_s' \to 0 \therefore\Longrightarrow i\frac{\sqrt{\pi}}{4}.ic^2\frac{\sqrt{\pi}}{8G}c \geq \frac{\hbar}{2} \therefore\Longrightarrow r_sMc = n\frac{\hbar}{2}$$

$$\therefore\Longrightarrow\ i\frac{\sqrt{\pi}}{4}.ic^2\frac{\sqrt{\pi}}{8G}c = n\frac{\hbar}{2}$$

$$\therefore\Longrightarrow \frac{c^3}{\hbar G}i\frac{\sqrt{\pi}}{4}.i\frac{\sqrt{\pi}}{4} = n$$

; n is the number of r_s collapsing hammering steps

$$\text{at } n = 1 \therefore\Longrightarrow \frac{c^3}{\hbar G}\left(i\frac{\sqrt{\pi}}{4}\right)^2 = 1$$

$$\therefore\Longrightarrow \frac{\left(i\frac{\sqrt{\pi}}{4}\right)^2}{{l_p}^2} = 1 \therefore\Longrightarrow i\frac{\sqrt{\pi}}{4} = l_p$$

$$\therefore\Longrightarrow n = \frac{r_s}{l_p} \text{at } n = 1 \therefore\Longrightarrow \frac{r_s}{l_p} = 1 \therefore\Longrightarrow \frac{2GM}{c^2 l_p} = 1$$

$$\frac{2GM}{c^2 l_p} = 1 \therefore M = \frac{c^2}{2G}\sqrt{\frac{G\hbar}{c^3}} = \frac{1}{2}\sqrt{\frac{c\hbar}{G}} \therefore\Longrightarrow M = \frac{m_p}{2}$$

$\frac{m_p}{2}$ is the least requierd mass to form a black hole

since energy is quantized

$$\therefore\Longrightarrow M = n\frac{m_p}{2} \text{ ; } n = 1,2,3 \ldots, \therefore\Longrightarrow \sqrt[z]{\frac{2M}{m_p}} = n \text{ ; } n = 1,2,3 \ldots., \text{ ; } z = 2,3,4 \ldots.,$$

This is the mass condition required to form a black hole

I will name it condition (T)

We could test this with elementary point particles if we could find one elementary point particle with mass that violet (T) condition then this mathematical model missing something or there is some shortage in it since these elementary point particles have no radius

Now the speed of light at singularity for out side observer is

$$\therefore\ c.(T) = \frac{c}{\left(\sqrt{1-\frac{1}{2}}\right)^{\frac{2M}{m_p}}} = \frac{c}{\left(\frac{1}{\sqrt{2}}\right)^{\frac{2M}{m_p}}}\ ;(T) = \left(\sqrt{2}\right)^{\frac{2M}{m_p}}\ \therefore\Longrightarrow c_T = c\left(\sqrt{2}\right)^{\frac{2M}{m_p}}$$

At the at singularty or a lockal observer at any Schwarzschild radius

$$\frac{2M}{m_p} = 1 \therefore\Rightarrow c_T = c\sqrt{2}$$

4-Black hole thermo dynamic:

entropy is a measure of the number of ways in which a system may be arranged in microscopic configurations that are consistent with the macroscopic quantities that characterize the system.

Or in other way its the scale of energy areange & dispersion & distribution in a system

So in this sense the entropy is the number of microstates or the natural logarithm of the multiplicity of these microstates multiplied by Boltzmann constant so for a single test particle with a single microstate reaching event horizon the entropy is zero

$$S = k_B \ln \Omega = k_B \ln 1 = 0$$

But as long as nothing could ever cross event horizon then it's safe to claim that what's located behind event horizon is nothing but empty space even when it's not

$$\therefore S = k_B \ln\left(\Omega\left(\sqrt{2}\right)^{\frac{2M}{m_p}}\right) = k_B\left(\ln\Omega + \ln\left(\sqrt{2}\right)^{\frac{2M}{m_p}}\right)$$

$$\therefore S = k_B \frac{2M}{m_p} \ln\sqrt{2} + k_B \ln\Omega$$

$$\text{at}\Omega = 1 \therefore S = k_B \frac{2M}{m_p} \ln\sqrt{2}$$

$$\text{at } \frac{2M}{m_p} = 1 \therefore \text{vacume entropy } S = k_B \ln\sqrt{2}$$

$$\therefore\Rightarrow U = k_B K \ln\sqrt{2} \therefore \text{at } K = 1 \therefore U_{bit} = k_B \ln\sqrt{2}$$

∴ Landauer's principle should be reconsidered

i.e. even when we have no entropy we will have this entropy for nothing just due to space-time nature then for a black hole receiving nothing.

$$S_T = k_B \frac{2M}{m_p} \ln\sqrt{2}$$

And that's what happened since nothing could cross event horizon

$$\text{since } S = \frac{\Delta U}{K} \therefore K = \frac{\Delta U}{S_T} = \frac{M(c_T)^2}{k_B \frac{2M}{m_p} \ln\sqrt{2}} = \frac{m_p c^2 \left(\sqrt{2}^{\frac{2M}{m_p}}\right)^2}{2\, k_B \ln\sqrt{2}}$$

$$\therefore K_T = \frac{m_p c^2}{k_B \ln\sqrt{2}}$$

$\therefore K_T = \frac{K_p}{\ln\sqrt{2}}$; $K_T \equiv$ the singularity temperature i.e. the black hole temperature and for local observer it's the same

Surface temperature of black hole have nothing to do with its mass it's always constant and this is very reasonable since nothing could ever cross event horizon because for anything going towards event horizon speed of light is always will increased $\left(c_T = c\sqrt{2}\right)$ so that event horizon will always run away from you it's just look like chasing an elusive mirage it always there but you cannot reach it.

5. The Collaboration between Schwarzschild Metric and Lorentz Transformation of a moving gravity well and it's effect on electric permittivity of the free space $(\varepsilon_\circ)$:

For electric charchge moving with a velocity v the lorentz transformation of the field is as follows

$$E_\parallel{}' = E_\parallel \quad , \quad B_\parallel{}' = B_\parallel$$

$$E_\perp{}' = \frac{(E + v \times B)_\perp}{\sqrt{1 - {v^2}/{c^2}}} \quad , \quad B_\perp{}' = \frac{\left(B - \frac{v \times E}{c^2}\right)_\perp}{\sqrt{1 - {v^2}/{c^2}}}$$

$$E_\perp{}' = \frac{(E + |v||B| \sin\theta)_\perp}{\sqrt{1 - {v^2}/{c^2}}} \quad , \quad B_\perp{}' = \frac{\left(B - \frac{|v||E| \sin\theta}{c^2}\right)_\perp}{\sqrt{1 - {v^2}/{c^2}}}$$

$$\because \gamma = \frac{1}{\sqrt{1 - {v^2}/{c^2}}} \therefore E_\perp{}' = \gamma(E + |v||B| \sin\theta)_\perp \;, \quad B_\perp{}' = \gamma\left(B - \frac{|v||E| \sin\theta}{c^2}\right)_\perp$$

$$\because E \perp B \therefore B \parallel v \therefore \sin\theta = 0 \therefore\Longrightarrow E_\perp{}' = \gamma E_\perp \;, \quad B_\perp{}' = \gamma B_\perp$$

$$\because \quad \mu_\circ = \frac{B}{H} \therefore H = \frac{B}{\mu_\circ} \therefore\Longrightarrow H_\perp{}' = \frac{\gamma B_\perp}{\mu_\circ} \therefore\Longrightarrow \mu_\circ{}' = \frac{\gamma B_\perp}{\frac{\gamma B_\perp}{\mu_\circ}} \therefore\Longrightarrow \mu_\circ{}' = \mu_\circ$$

where $\parallel$ and $\perp$ are relative to the direction of the velocity V Since in this example, $B_\parallel = 0$ and $B_\perp = V \times E_\perp$ in the laboratory frame, the magmatic field in the frame of the moving charge indeed vanishes consistent with our intuition. The static Maxwell's equations are satisfied in both frames

$$\varepsilon_\circ = \frac{q}{\Phi_E} = \frac{q}{E 4\pi r^2}\hat{r} \;\because E = (E_\perp + E_\parallel),,,, \because E_\perp = E_x + E_y ,,,, \because E_\parallel = E_z \therefore E = \left(\frac{2}{3}E_\perp + \frac{1}{3}E_\parallel\right)$$

$$\therefore\Longrightarrow \varepsilon_\circ{}' = \frac{q}{\left(\gamma\frac{2E_\perp}{3} + \frac{E_\parallel}{3}\right) 4\pi r^2}$$

$$\because\ \varepsilon_{\circ}{}' = \frac{q}{\frac{(2\gamma+1)}{3}E4\pi r^2}\hat{r} \therefore\Longrightarrow \varepsilon_{\circ}{}' = \frac{3q}{(2\gamma+1)E4\pi r^2} \therefore\Longrightarrow\ \varepsilon_{\circ}{}' = \varepsilon_{\circ}\frac{3}{(2\gamma+1)}$$

$$\because\ c = \frac{1}{\sqrt{\varepsilon_{\circ}\mu_{\circ}}} \therefore\Longrightarrow\ c' = \frac{1}{\sqrt{\varepsilon_{\circ}{}'\mu_{\circ}}} = \frac{1}{\sqrt{\frac{3\,\varepsilon_{\circ}\mu_{\circ}}{(2\gamma+1)}}}\ \therefore c' = c\sqrt{\frac{1}{\frac{3}{(2\gamma+1)}}}$$

$$\therefore c' = c\sqrt{\frac{(2\gamma+1)}{3}}$$

This is unrecognizable in Michelson and Morley experiment since its direction dependent while the speed of light by formula definition is a scalar quantity because it's dependent on the electric permittivity of the empty space in which dependent on the electric flux in which direction neutral

Speed of light is not a vector quantity it’s a scalar quantity it’s independent on the direction of the moving source nor the observer it’s only dependent on the nature of the empty space itself i.e. $(\varepsilon_{\circ})$ electric permittivity of the empty space & $(\mu_{\circ})$ magnetic permeability of the empty space

$$c = \frac{1}{\sqrt{\varepsilon_{\circ}\mu_{\circ}}}\ ;\ \varepsilon_{\circ} = \frac{q}{\Phi_E} = \frac{q}{E4\pi r^2}\hat{r}\ ;\ \ \mu_{\circ} = \frac{B}{H}$$

Now let's consider a moving gravity well then at it's surface the electromagnetic fields is under lorentz transformation and schwarzchield metric in this case direction of velocity of the gravity well will be effective due to the collaboration between lorentz transformations and Schwarzchield metric because we have a runaway gravity well and this will change the nature of empty space then the speed of light as a result.

So when a big mass moves it will drag space-time with it just little extra due to the movement of the mass it's just look like a ball tangled with the fabric of space-time so the gravitational tidal elongation due to schwarzchield metric sometimes will get increased and sometimes will get decreased depending on the angle of direction between the moving mass and it's velocity.

Of course we need to achieve this a huge concentrated amounts of mass in front of or behind your space-time to drag it or to push it that's mean to see this effect you need to set Michelson interferometer vertically and you will get a warped space time

So for collaboration between Schwarzschild metric and lorentz transformation the speed of light is as follow

$$\therefore c = c_{B_r} = c\,.\,B_r\,;B_r\; = \left(1 - \frac{6GM}{r(2\gamma\cos(t) + 1)c^2}\right)^{-\frac{1}{2}};\gamma = \frac{1}{\sqrt{1 - v^2/c^2}};r_s = \frac{2GM}{c^2};0 \le t \le \pi$$

By using the space-time interval at singularity in which I drived befor from Schwarzschild metric

$$\therefore ds^2 = -\left(\left(1 - \frac{1}{2}\right)c^2 \frac{r_s'.r_s'}{c^2\left(1 - \frac{1}{2}\right)^2}\right) + \left(\frac{r_s'.r_s'}{\left(1 - \frac{1}{2}\right)}\right)$$

$$\therefore c_{B_r} = c\,.\,B_r = c\left(1 - \frac{3}{\big((2)(2\gamma\cos(t) + 1)\big)}\right)^{-\frac{1}{2}};\gamma = \frac{1}{\sqrt{1 - v^2/c^2}};0 \le t \le \pi$$

$$g = \frac{MG}{(r_{Br})^2} = \frac{MG}{\left(\frac{2GM}{{c_{B_r}}^2}\right)^2} = \frac{\left(c_{B_r}\right)^4}{4MG} = \frac{c^4\,{B_r}^4}{4MG}$$

$$\therefore\Rightarrow g = \frac{F_p}{4M}{B_r}^4;B_r = \left(1 - \frac{3}{\big((2)(2\gamma\,cos(t) + 1)\big)}\right)^{-\frac{1}{2}}$$

$$\text{at } t = 0 \;\; \therefore\Rightarrow g = \frac{F_p}{4M}{B_r}^4$$

$$;escape\ velocity = c_{B_r} = \frac{c}{\left(1 - \frac{3}{(4\gamma + 2)}\right)^{\frac{1}{2}}}$$

$$\text{at } t = \frac{\pi}{2}\ \therefore\Rightarrow g = \frac{F_p}{4M}{B_r}^4 = \frac{F_p}{M}$$

$$;escape\ velocity = c_{B_r} = c.i\sqrt{2} = c.i\sqrt{2} + 0$$

$$\text{at } t = \pi \therefore\Rightarrow g = \frac{F_p}{4M}{B_r}^4;\text{escape velocity} = \; c_{B_r} = \frac{c}{\sqrt{\left(1 - \frac{3}{2 - 4\gamma}\right)}}$$

i.e. at the poles the gravity is the highest but escape velocity towards the poles is zero so that black hole should be leaking at the poles i.e. relativistic jets.

$$\text{at } \mathrm{t} = \pi \therefore\Rightarrow B_r = \left(1 - \frac{3}{(2 - 4\gamma)} \right)$$

This is is really a good candidate solution for the dark-matter and relativistic jets and the information paradox.

$$\because \text{ surface gravity} \Rightarrow \mathrm{g} = \frac{\mathrm{MG}}{(\mathrm{r_s}')^2} = \frac{\mathrm{MG}}{\left(\frac{2\mathrm{GM}}{(\mathrm{c}\sqrt{2})^2}\right)^2} \therefore\Rightarrow \mathrm{g_T} = \frac{\mathrm{MG}}{\left(\frac{\mathrm{GM}}{\mathrm{c}^2}\right)^2}$$

$$\therefore\Rightarrow \mathrm{g} = \frac{\mathrm{c}^4}{\mathrm{MG}} = \frac{\mathrm{F_p}}{\mathrm{M}} \therefore\Rightarrow \text{at } \mathrm{g} = \sqrt{2} \text{ , (T) spontaneous emission point}$$

$$\mathrm{g} = \frac{\mathrm{MG}}{(\mathrm{r_s})^2}$$

$$\mathrm{g} = \frac{\mathrm{MG}}{\left(\frac{2\mathrm{GM}}{c_{B_r}{}^2}\right)^2}; B_r = \frac{1}{\sqrt{1 - \frac{6\mathrm{GM}}{\mathrm{r}(2\gamma\cos(\mathrm{t}) + 1)\mathrm{c}^2}}}; \gamma = \frac{1}{\sqrt{1 - \mathrm{v}^2/\mathrm{c}^2}}; \mathrm{r_s} = \frac{2\mathrm{GM}}{\mathrm{c}^2}; 0 \le \mathrm{t} \le \pi$$

This is really a good candidate solution for the dark-matter

$$\mathrm{g} = \frac{\mathrm{MG}}{(\mathrm{r})^2} = \frac{\mathrm{MG}}{(\mathrm{r_s} + \mathrm{h})^2}$$

$$\mathrm{g} = \frac{\mathrm{MG}}{\left(\frac{2\mathrm{GM}}{c_{B_r}{}^2} + \mathrm{h}\right)^2}; B_r = \frac{1}{\sqrt{1 - \frac{6\mathrm{GM}}{\mathrm{r}(2\gamma\cos(\mathrm{t}) + 1)\mathrm{c}^2}}}; \gamma = \frac{1}{\sqrt{1 - \mathrm{v}^2/\mathrm{c}^2}}; \mathrm{r_s} = \frac{2\mathrm{GM}}{\mathrm{c}^2}; 0 \le \mathrm{t} \le \frac{\pi}{2}$$

$$g_{B_r} = \frac{MG}{\left(\frac{2GM}{\left(c\left(\frac{1}{\sqrt{1-\frac{6GM}{r(2\gamma\cos(t)+1)c^2}}}\right)\right)^2}+h\right)^2};\gamma = \frac{1}{\sqrt{1-v^2/c^2}};0 \le t \le \frac{\pi}{2}$$

6-Experimental results:

Since the speed of light is independent on the direction of the moving source nor the observer it’s only dependent on the nature of the empty space itself

$$c = \frac{1}{\sqrt{\varepsilon_\circ \mu_\circ}}\ ;\varepsilon_\circ = \frac{q}{\Phi_E} = \frac{q}{E4\pi r^2}\hat{r}\ ;\ \ \mu_\circ = \frac{B}{H}$$

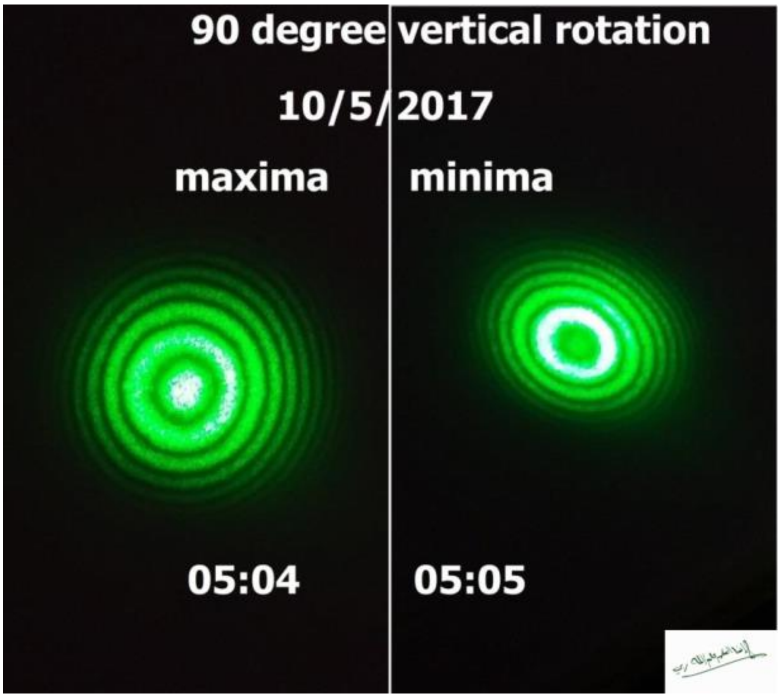
Then changing the distanse from a gravity source will change the nature of the empty space itself due to gravitonal tidal effect

We could detect this through seting michelson morley experiment vertically in respect to earth and not parallel to it to the earth and not horesontaly in this way when we rotate the Michelson's interferometer 90 degree we should get a segnefecant change due to gravitonal tidal difrence that responce to the change in the speed of light

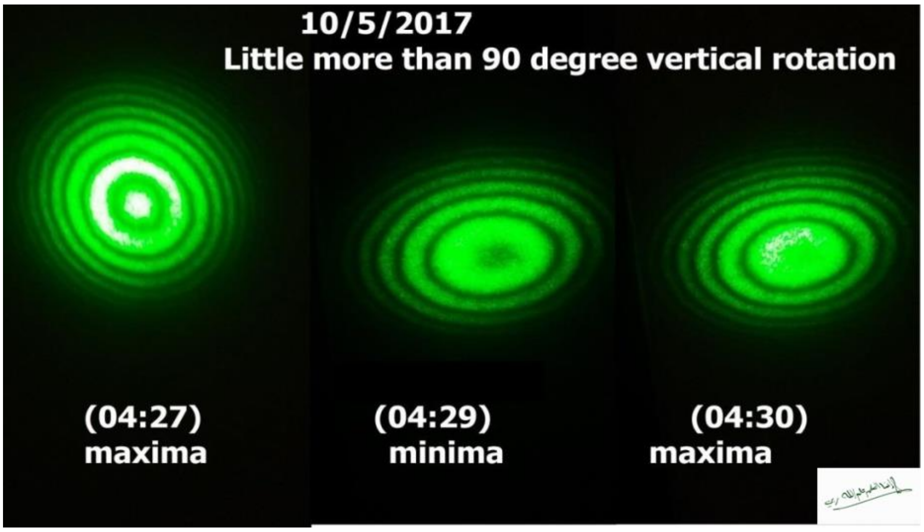
$$c' = \frac{1}{\sqrt{\varepsilon_\circ \mu_\circ\left(1-\frac{r_s}{r}\right)}} \therefore\Rightarrow c' = c\left(1-\frac{r_s}{r}\right)^{-1/2}$$

I get so many marvelouse results it was quite a shock to see Michelson-Morley experiment working

For 90° rotation I have a positive chnge in the central interference pattern from maxima to minima in the central interference pattern.



For more than 90° rotation I have a positive chnge in the central interference pattern from maxima to minima to maxima in the central interference pattern

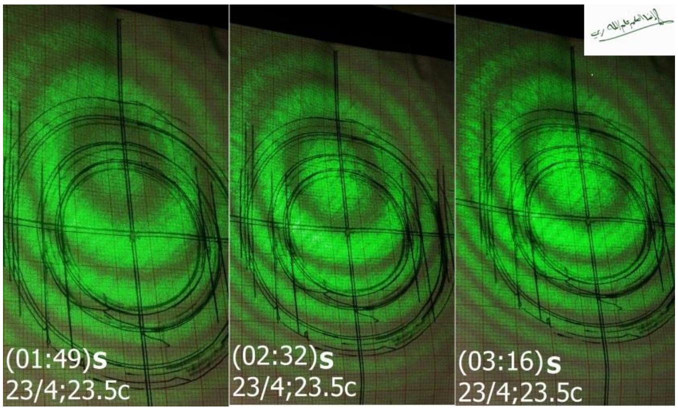


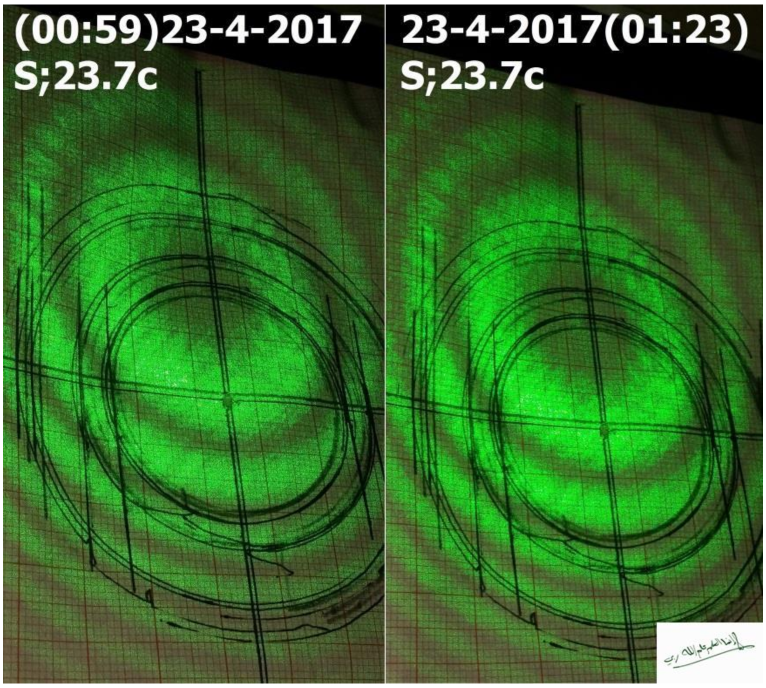
However detecting the collaboration (Br) effect is much harder since it's depending on the movement of the earth so a vertical non rotating interferometer in wich it's horizontal arm oriented to the north or south to elemenate Sagnac effect should be enugh to do it

So I get alot of results considering the same temperatuer and the minimum time elapsed to remove as possible the earth tilting effect and any thermal effect on the interferometer

The folowing are some of these results


21-4-2017
(05-00)H;21.5c
21-4-2017
(05-55)H;21.5c


(01:49)s
23/4;23.5c
(02:32)s
23/4;23.5c
(03:16)s
23/4;23.5c


(00:59)23-4-2017
S;23.7c
23-4-2017(01:23)
S;23.7c

I am realy want to re do the expermint for (B_r) effect with a fixed gravimeter it's the only way to elemenate Sagnac effect permanently and allow us to make a precise measurements

Or we could make ordinary horizontal Michelson-Morley experiment but beside a big mountain-chain so that the mass of the mountain-chain will act like a run away gravity well

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7-Conclusions:

1. The electric flux get stretch and constrict due to gravitonal effect and since the electric charge is conserved then this will affect the electric permittivity of the free space $(\varepsilon_\circ)$ and then as a consequnce the speed of light itself such that it updated as folow

   ;for any usual gravity well $\left[c' = c\left(1 - \frac{r_s}{r}\right)^{-1/2}\right]$

   ;& for black hole we have $\left[c_T = c(\sqrt{2})^{\frac{2M}{m_p}}\right]$
2. Since we always will have($r_s < r$) due to the change in the speed of light because of the gravitonal tidal effect and since we will have always ($ds^2 = 0$) at singularity then Space–time is continuous and not discrete because when $[r_s = l_p \therefore\Rightarrow r_s' < l_p]$ and despite of Zeno paradox we will get a zero Space–time interval $[ds^2 = 0]$ that will leave us with only one result Space–time is continuous and not discrete it's a continuous physical entity I will call it Al-Hubokfrom arabic means woven or fabric.
3. From (T) condition & the (B_r)effect of the collaboration between Schwarzschild metric and Lorentz transformation the only conclusion is that that the gravity is some sort of a reflection of the of the uncertainty principle through the fabric of space-time and it doesn't need a messenger particle at all it's just look like that the probability distribution of the elementary particles due to the uncertainty principle through the fabric of space-time this probability distribution will create the difference in energy density distribution with no need to a messenger particle of any sort

   Basicly the probability destribution to energy and mater in space-time fabric except in the movment of the gravity well contribute to the whole energy density distribution and this is what Einstein field equations originally state (gravity is a curvature in space time due to difference in energy density distribution through this fabric).

4. The (B_r) effect i.e. collaboration between Schwarzschild metric and Lorentz transformation is realy very good candidate solution for the dark matter problem since the speed of light get efected by the speed of the gravity well itself then the gravity itself will change it even change the gravitonal lensing due to the movement angle (t) of the gravity well as in factor (B_r) so we will have some sort of a gravitonal lensing dependent on the direction angle (t) and velocity of moving gravity well, I call it (B_r) refraction.

5. (B_r) effect is really a good candidate solution for the relativistic jets and the information paradox since escape velocity at the poles is zero and since nothing could cross the event horizon.

$$\left[\text{at } t = \frac{\pi}{2} \therefore\Rightarrow escape\ velocity = c_{B_r} = c.i\sqrt{2} = c.i\sqrt{2} + 0\right]$$

6. (B_r) effect is h our way to make space-time warp drive we only need to concentrate a beam of elementary particles to a high level we should only avoid (T) condition in the concentration process and when we accelerate such a beam it will warp the space-time itself by (B_r) factor $\left[(B_r) = \left(1 - \frac{6GM}{r\left(2\frac{1}{\sqrt{1-v^2/c^2}}\cos(t)+1\right)c^2}\right)^{-\frac{1}{2}} ; (B_r)\text{dependent on t\&v\&M}\right]$

7. we could make a successful ordinary horizontal Michelson-Morley experiment but beside a big mountain-chain so that the mass of the mountain-chain will act like a run away gravity well and we will have a positive results unlike what we have in the orginal experiments in which failed .

8. $\because$ vacume entropy $\left[U_{bit} = k_B \ln\sqrt{2}\right]$ so Landauer's principle should be reconsidered

9. Surface temperature of black hole have nothing to do with its mass it's always constant for a local observer and it's the same temperatuer of the singulrity and this is very reasonable since nothing could ever cross event horizon because for anything going towards event horizon speed of light is always will increased $\left[c_T = c\sqrt{2}\right]$ so that event horizon will always run away from you it's just look like chasing an elusive mirage it always there but you cannot reach it

10. Since event horizon is un reachable that's mean black hole cannot evaporate that's means black hole feeds on nothing but quantum foam will leak out the quantum foam from its poles since escape velocity at the poles direction is zero.

$$\left[\text{at } t = \frac{\pi}{2} \therefore\Rightarrow escape\ velocity = c_{B_r} = c.i\sqrt{2} = c.i\sqrt{2} + 0\right]$$

İt's a good way to stady the quantum foam

11. Black hole entropy is vacume entropy multiplied by (T)condition

$$S_T = k_B \frac{2M}{m_p} \ln\sqrt{2}$$

8-Key features:

- $\varepsilon_\circ$ ≡ electric permittivity of the free space
- $\mu_\circ$ ≡ magnetic permeability of the free space
- Φ_E ≡ electric flux
- q ≡ electric charge
- E ≡ electric field
- M ≡ mass of the gravity well
- Φ ≡ gravity potetional
- G ≡ Gravitational constant
- r ≡ gravity well radius
- c' ≡ updated speed of light due to gravity
- f ≡ photon frequncy in free space
- f_g ≡ photon frequncy near gravity well i. e. blue shifted
- λ ≡ wave length
- λ_g ≡ wave length near gravity well blue shifted
- ε' ≡ updated electric permittivity of the free space due to gravity
- ds^2 ≡ space − time interval
- r_s ≡ Schwarzschild radius
- $r_s{}'$ ≡ updated Schwarzschild radius due to gravity
- $dr_s{}^2$ ≡ *line element squared in Schwarzschild metric*
- $dt_s{}^2$ ≡ *time element squared in Schwarzschild metric*
- l_p ≡ *planck length*

- $\mathrm{m_p} \equiv planck\ mass$
- $\mathrm{M} \equiv$ black hole mass
- $\mathrm{T} \equiv black\ hole\ factor$
- $c_T \equiv updated\ speed\ of\ light\ due\ to\ (T)\ factor$
- $\left(r_T = i\frac{\sqrt{\pi}}{4}\right) \equiv (T)\ or\ black\ hole\ ratio\ radius$
- $\hbar \equiv planck\ reduced\ constant = h/2\pi$
- $k_B \equiv Boltzmann\ constant$
- $S \equiv entropy$
- $\Omega \equiv microstates\ multiplicity$
- $K_T \equiv black\ hole\ Surface\ temperature\ for\ a\ local\ observer$
- $S_T \equiv black\ hole\ entropy\ i.e. free\ space\ entropy$
- $U \equiv energy\ in\ thermo\ dynamic\ part$
- $\gamma \equiv Lorentz\ factor$
- $B_r \equiv colabration\ factor$
- $c_{B_r} \equiv updated\ speed\ of\ light\ due\ to\ colabration\ factor$
- $t \equiv$ direction angle of movement of the gravity well
- $\mathrm{F_p} \equiv planck\ force$
- $\mathrm{g} \equiv$ surface gravity
- $\mathrm{g_T} \equiv black\ hole\ surface\ gravity$
- $\mathrm{g}_{B_r} \equiv surface\ gravity\ due\ to\ colabration\ factor$

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