European Journal of Applied Sciences – Vol. 13, No. 02
Publication Date: April 25, 2025
DOI:10.14738/aivp.1302.18744.
Bender, D. (2025). The Dying of a Principle: The Bending of Light, the Oppenheimer-Snyder Gravitational Contraction, and the Postulate of Relativity. European Journal of Applied Sciences, Vol - 13(02). 505-546.

The Dying of a Principle: The Bending of Light, the Oppenheimer-Snyder Gravitational Contraction, and the Postulate of Relativity

Darrell Bender
New Mexico Institute of Mining and Technology

ABSTRACT

Considering the lack of any real energy wave sphere with wave energy to lose with non-zero wave velocity inside the photon and a cosmological redshift to be accounted for, we reflect on the case of an imaginary energy wave sphere, introduced in Classical Quantum Hidden Variable Gravitation, inside the photon, "We are literally forced since its time is at hand to consider the case of an imaginary energy wave sphere inside the photon, this imaginary energy wave sphere losing the fraction $\frac{\alpha_M}{r}$ of its energy. Once again, the fraction $\frac{\alpha_M}{r}$ of the energy that the imaginary energy wave sphere with mass m loses in the sense that the square of the imaginary energy wave velocity function, $d\mathcal{X}_4{}^2(r)$, is negative with increasing absolute value is the square $\left(\frac{v}{c}\right)^2$ of the ratio of its velocity $-v$ to c." Going in, we have a perpendicular light ray with velocity $c = 1$ and frequency ν. The velocity of the wave in the imaginary energy wave sphere $cd\mathcal{X}_4(r) = ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$, which amounts to a loss of energy from its 0 energy state at infinite r, results in a velocity of $-c\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$ for the imaginary energy wave sphere, which is inside the photon. Without any redshift, the square of the velocity of the resulting light ray is $c^2 + c^2\frac{\alpha_M}{r} = c^2\left(1 + \frac{\alpha_M}{r}\right)$, so the resulting light ray must be red shifted by the factor $\left(1 + \frac{\alpha_M}{r}\right)^{\frac{1}{2}}$ for its velocity to be $c = 1$. Once again, both the radial component and the perpendicular one of the resulting light rays are $\left(v^2 + c^2\right)^{-\frac{1}{2}}$ times the corresponding component of the non-red shifted light ray. For $\tan\theta$, we have $\tan\theta = \left(\frac{\alpha}{r}\right)^{\frac{1}{2}}$. Of the Oppenheimer-Snyder paper, "On Continued Gravitational Contraction," we write, The claim that "they showed when a sufficiently massive star runs out of thermonuclear fuel, it will undergo continued gravitational contraction and become separated from the rest of the universe by a boundary called the event horizon, which not even light can escape" is false since Oppenheimer and Snyder only "should expect," an expression they use twice, or should assume it to be true: "We should now expect that since the pressure of the stellar matter is insufficient to support it against its own gravitational attraction, the star will contract, and its boundary r_b will necessarily approach the gravitational radius r_0. Near the surface of the star, where the pressure must in any case be low, we should expect to have a local observer see matter falling inward with a velocity very close to that of light; to a distant observer this motion will be slowed up by a factor $\left(1 - \frac{r_0}{r_b}\right)$." Since Oppenheimer and Snyder take the line

element outside the boundary r_b of the stellar matter to be $ds^2 = \left(1-\frac{r_0}{r}\right)dt^2 - \left(1-\frac{r_0}{r}\right)^{-1}dr^2 - r^2\left(d\theta^2 + \sin^2\theta d\varphi^2\right)$ (1), which is the Schwarzschild metric with g_{44} for the time coordinate the multiplicative inverse, corresponding to a faster clock, of the actual g_{44} for the time coordinate, the statement regarding what the local observer and the distant observer see is questionable. Near the surface of the star, the matter falling inward has a velocity close to that of light and that is what a distant observer sees. With the Schwarzschild metric clock and no change in the unit of distance, the time for the matter falling inward to travel a distance l is greater than the time, as measured by the distant clock, for the matter to travel the distance l by the factor $\left(1-\frac{r_0}{r_b}\right)^{-\frac{1}{2}}$. Thus the local observer with the Schwarzschild metric clock and no change in the unit of distance measures the velocity of the matter falling inward as $c\left(1-\frac{r_0}{r_b}\right)^{\frac{1}{2}}$. With the actual clock rate, $\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$, corresponding to the ratio of the velocity of the wave in an energy wave sphere to c, and no change in the unit of distance, this velocity is $c\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, which becomes arbitrarily large as $r \searrow \alpha$. A measuring rod of length l for infinite r, no matter how the length changes along the way, will still be a measuring rod of length l for finite $r > \alpha$. With the Schwarzschild metric clock and the Schwarzschild distance coordinate along a radius, the length l, if aligned along a radius, will increase by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, but when measured with the Schwarzschild metric measuring rod, the length of which increases by the same factor, its length is just l *and* since the length increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, the time for light to travel the distance l as measured by the Schwarzschild metric clock increases by two factors of $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$; thus, with Schwarzschild metric units for distance and time, the measured velocity of the matter falling inward is $c\left(1-\frac{\alpha}{r}\right)$. For an observer comoving with the stellar matter, the time, as measured by the Schwarzschild metric clock, for this asymptotic isolation, the star closing itself off from any communication with a distant observer, is the same time as measured by a distant observer because the moving clock is slowed by the factor $\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$, but the Schwarzschild metric does not give the correct clock rate. Of the Lorentz transformation for the time coordinate, we show that the time coordinate τ is that of a faster clock, as follows: Since x is the coordinate in the rest system of a point at rest in the moving system k and $x' = x - vt$, [33] we have $x' = x$ when $t = 0$, but since $x = x'' + vt$ for some x'', we must have when $t = 0$, $x' = x''$. Thus $x' = x'' + vt - vt = x''$ for all t. Thus the Lorentz transformation for the distance coordinate is $\xi = \beta x''$ and the Lorentz transformation for the time coordinate is $\tau = \frac{\xi}{c} = \beta\frac{x''}{c} = \beta t$, which gives faster clock since $\beta = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} > 1$. The first time one discovers by thinking about it that some great postulate is false because of a contradiction, an alarm bell rings, yet the propaganda that the postulate is true pervades in the face of obvious evidence that contradicts it. As far as figuring this out, most will just consider the postulate to be true. When the

process involves every significant postulate at which one looks with corresponding propaganda too, the entities that control this are considered to be evil when the dumbing of the crowd is at hand. Years ago when we first considered the measured velocity of light in the moving system, we were aware that this matter had already been resolved beforehand by Einstein's principles or postulates thinking that postulates in plain sight had to be true. We analyzed the case that follows and blamed the problem that what we obtained for the velocity of light was not c on the Lorentz contraction since the postulated value for this velocity had to be c. Given a length l moving with velocity v parallel to the length and a light ray moving in the opposite direction from one end of the length to the other, the time in the rest system for the light ray to traverse the length l is $l/(v+c)$. In the moving system, where the clocks move more slowly by the factor $1/\beta$, this time is $(1/\beta)(l/(v+c))$. If the length l is Lorentz contracted by the factor $1/\beta$, then the time in the rest system for the light ray to traverse the length, which is now $\frac{l}{\beta}$, is shortened by an additional factor of $1/\beta$ so that the time in the moving system is now $(1/\beta)^2(l/(v+c))$. This last value for the time in the moving system gives for the measured value of the velocity of the light ray in the moving system $\beta^2(v+c)$, which is not c or $v+c$ either. The only way to get $v+c$ is for the length l to get bigger by the factor β. Of course, the problem was not the Lorentz contraction, but Einstein's principles, which were never true. The dying of Einstein's principles, the one about the same laws of physics holding in systems that are in uniform translatory motion and the other, taken to be a law, about the velocity of light being the constant c, gives one access to the light of free thought, which was always suppressed. To quote Dylan Thomas, "Do not go gentle into that good night. Rage, rage against the dying of the light."

When we first considered, the first time ever, the bending of light in a gravitational field in *On the Nature of Being: Gravitation*, near the end, the relevant circumstance regarding the motion of an energy wave sphere was that the energy lost by the energy wave sphere becomes its energy of motion. In terms of the bending, if at all, of light, the application of this condition was that the energy lost by a light ray perpendicular to a radius becomes its energy of motion in the radial direction. The result was a light ray that satisfied the energy lost/energy of motion criterion, but which was red-shifted.

Not seeing any experimental evidence of such a redshift, we changed the treatment in *Quantum Gravity, Energy Wave Spheres, and the Proton Radius* to one with no redshift, but left open, conditionally, the matter of redshift. Being blind to, or unaware of, the *cosmological redshift*, the one supposedly resulting from Big Bang related expansion of space, changed after we considered it. After attempting to obtain a redshift out of the treatment with no redshift, we reverted to the redshift case.

In On the Nature of Being: Gravitation, beginning at page 94, our copy, we considered the bending of a light ray in a gravitational field as follows:

"The remaining consideration here, having by now exceeded the ten page limit, is the bending of light in a gravitational field. As noted in Part 4, Einstein, without any arguments, remarks, "We easily recognize that the course of the light-rays must be bent with regard to the system of co-ordinates, if the g_{mn} are not constant." In *what amounts to* assuming, *similar to assuming, before now shown to be false, that the acceleration of the material point is equal to the coordinate acceleration*, in general that the coordinate-wise *functions* of the path of the light do whatever the corresponding functions of the coordinates do, Einstein assumes, specifically here, that the *curvature* of the light-ray is given by

$$-\frac{\partial \gamma}{\partial n}. \quad [6.81]$$

What *we have discovered*, conversely, is that the space-time coordinates are such that *when we measure the acceleration of a material point in a gravitational field with the space-time coordinates that exist there*, we obtain for the acceleration

$$-\frac{\alpha}{2r^2}, \quad [6.82]$$

with $\frac{\alpha}{r} = v^2$; and the frequency *or* clock rate and, hence, energy, of the de Broglie wave clocks of the hydrogen atom decreases by a factor of

$$f = \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}} \frac{sec'}{sec}, \quad [6.83]$$

with the distance coordinate along a radius not changing at all, the energy lost by the de Broglie wave clocks going into the energy of motion of the hydrogen atom.

Similarly, *perhaps*, in the case of a light ray moving perpendicularly to a radius, we have the frequency of the light in the perpendicular direction decreasing by a factor of

$$f = \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}} \frac{sec'}{sec}. \quad [6.84]$$

The energy lost,

$$\left(1 - \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}} \frac{sec'}{sec}\right) h\nu, \quad [6.86]$$

becomes the *component* in the *radial* direction of the energy of the resulting light ray."

As we note in On the Nature of Being: Gravitation, such a light ray, counter to physical reality perhaps, which is enough to cancel the deal, is invariably red-shifted:

"More generally, for a light ray moving perpendicularly to a radius, if the frequency of the light in the perpendicular direction decreases by a factor of

$$\beta(r) \quad [6.87]$$

With

$$\big(1-\beta(r)\big)h\nu, \quad [6.88]$$

the energy lost, becoming the *component* in the *radial* direction of the energy of the resulting light ray. While energy is conserved in the sense that

$$\beta(r)+\big(1-\beta(r)\big)=1, \quad [6.89]$$

the energy,

$$\left(1-2\beta(r)+2\big(\beta(r)\big)^2\right)^{\frac{1}{2}}h\nu, \quad [6.90]$$

of the resulting light ray is not.

If $\beta(r)$ is the clock rate at r, then the frequency of the component of light in the radial direction, as measured by the clock at r, is given by

$$\left(\frac{1}{\beta(r)}-1\right)\nu; \quad [6.91]$$

moreover, the factor of the frequency,

$$\left(\frac{1}{\beta(r)}-1\right) \quad [6.92]$$

is also, approximately, for sufficiently large r and $\beta(r)$ *well-behaved*, e.g.,

$$\beta(r)=\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}\frac{sec'}{sec}, \quad [6.93]$$

the tangent of the direction of light,

$$tan\big(\theta(r)\big), \quad [6.94]$$

as measured in the distance coordinates of flat space-time. Since there is no change in the distance coordinates in the gravitational field, the same factor gives the tangent of the direction of light in the coordinates of the gravitational field. We *imagine* a light ray, emitted, perpendicular to a radius, by an atom at infinite r, to *correspond to* the light ray, emitted by the same atom at finite distance r, at the angle $\theta(r)$.

For a light ray, with perpendicular and radial components of energy as above, to have c as its velocity with respect to flat space time, its wavelength must be

$$\left(1-2\beta(r)+2\big(\beta(r)\big)^2\right)^{-\frac{1}{2}} \quad [6.95]$$

times the value of the wavelength λ corresponding to the frequency ν. Since for $\beta < 1$,

$$\beta > \beta^2, \quad [6.96]$$

this gives a greater, or red-shifted, wavelength. For

$$\beta = \left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}, \quad [6.96]$$

we have, for the wavelength λ,

$$\lambda = \lambda_0\left(1-2\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}\left(1-\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}\right)\right)^{-\frac{1}{2}}, \quad [6.97]$$

and, for $\frac{d\lambda}{dr}$, we have

$$\frac{d\lambda}{dr} = -\frac{1}{2}\lambda_0\left(1-2\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}+2\left(1-\frac{\alpha}{r}\right)\right)^{-\frac{3}{2}}\left(-\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}\frac{\alpha}{r^2}+2\frac{\alpha}{r^2}\right)$$

$$= \left(-\frac{1}{2}\lambda_0\frac{\alpha}{r^2}\left(1-2\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}+2\left(1-\frac{\alpha}{r}\right)\right)^{-\frac{3}{2}}\right)\left(2-\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}\right). \quad [6.98]"$$

Before further consideration of whether this account gives the explanation of the bending of light in a gravitational field, we continue with Einstein's development as given in *On the Nature of Being: Gravitation*:

"Einstein has space-time coordinates in the gravitational field given by a clock with rate

$$f = \left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{-\frac{1}{2}}\frac{sec'}{sec}, \quad [6.99]$$

the multiplicative inverse of the actual clock rate, and a distance coordinate, for the x coordinate aligned along a radius, given by, for a unit measure of length in flat space –time,

$$dx = 1 - \frac{\alpha}{2r}, \quad [6.100]$$

which gives a greater unit of distance rather than the smaller one claimed by Einstein *or* the actual unit of distance that does not change. Thus equipped, Einstein obtains *his* value, which we considered in Part 4, for the *curvature* of a ray of light.

Einstein, without giving an argument, easily recognizes that the course of the light ray must be bent with regard to the system of coordinates if the $g_{\mu\nu}$ are not constant, the curvature, by the Huyghens principle, of the light ray is given by

$$-\partial\gamma/\partial n, \quad [6.101]$$

where

$$\sqrt{\left(\frac{dx_1}{dx_4}\right)^2 + \left(\frac{dx_2}{dx_4}\right)^2 + \left(\frac{dx_3}{dx_4}\right)^2} = \gamma, \quad [6.102]$$

and n is a direction perpendicular to the propagation of light.

For "the curvature undergone by a ray of light passing by a mass M at the distance Δ. If we choose the system of co-ordinates in agreement with the accompanying diagram, the total bending of the ray (calculated positively if concave towards the origin) is given in sufficient approximation by

$$\mathrm{B} = \iint_{-\infty}^{+\infty} \frac{\partial\gamma}{\partial x_1} dx_2$$

while (73) and (70) give

$$\gamma = \sqrt{\left(\frac{g_{44}}{g_{22}}\right)} = 1 - \frac{\alpha}{2r}\left(1 + \frac{x_2^2}{r^2}\right)$$

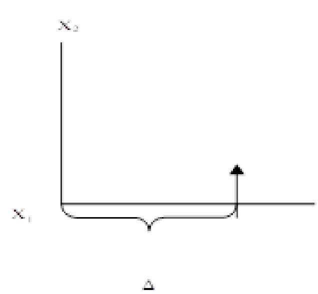


Figure 8

Carrying out the calculation, this gives

$$B = \frac{2\alpha}{\Delta} = \frac{\kappa M}{2\pi\Delta} \ldots . (74)"$$

Since, by the chain rule for partial derivatives,

$$\frac{\partial\gamma}{\partial x_1} = \frac{\alpha}{2}\left(\frac{1}{r^2} + 3\frac{{x_2}^2}{r^4}\right)\frac{\partial r}{\partial x_1}, \quad [6.103]$$

the integral,

$$\int_{-\infty}^{+\infty} \frac{\partial\gamma}{\partial x_1} dx_{2,} \quad [6.104]$$

is equal to

$$\int_{-\infty}^{+\infty} \frac{\alpha}{2}\left(\frac{1}{r^2} + 3\frac{{x_2}^2}{r^4}\right)\frac{1}{r} x_1 dx_2. \quad [6.105]$$

For the integral,

$$\int_{-\infty}^{+\infty} \frac{\alpha}{2}\frac{1}{r^3} x_1 dx_2, \quad [6.106]$$

of the first term, we have, for example,

$$2\int_0^{+\infty} \frac{\alpha}{2}\frac{1}{(\Delta^2 + {x_2}^2)^{\frac{3}{2}}} \Delta dx_2$$

$$= \alpha\Delta \int_0^{+\infty} \frac{1}{(\Delta^2 + {x_2}^2)^{\frac{3}{2}}} dx_2$$

$$= \alpha\Delta \lim_{x_2 \to \infty} \frac{x_2}{\Delta^2\sqrt{{x_2}^2 + \Delta^2}}$$

$$= \frac{\alpha}{\Delta}, \quad [6.107]$$

with units that of

$$\frac{energy}{mass} = (velocity)^2. \quad [6.108]$$

One might *argue* that Einstein obtains the correct result, the experimental verification of which we have not considered, *for the bending of light by considering space-time coordinates with his* $g_{\mu\nu}$*'s*, inverted in the case of g_{44}, by calculating

$$\frac{\partial\gamma}{\partial x_1} \quad [6.109]$$

from the wrong direction, that is, in the gravitational field.

We must consider any bending of light around a mass to be observable in flat space-time. On the other hand, since

$$\frac{dx_1}{dx_2} = \sqrt{\frac{g_{22}}{g_{11}}}\frac{dX_1}{dX_2}, \quad [6.110]$$

the tangent of the angle that a light ray, perpendicular to a radius, *is bent*, this bending seemingly contradicting the perpendicularity, is not the same, for non-zero

$$\frac{dX_1}{dX_2}, \quad [6.111]$$

unless

$$g_{11} = g_{22}. \quad [6.112]$$

If we multiply

$$\frac{\partial\gamma}{\partial x_1} \quad [6.113]$$

by dx_2 to obtain

$$\frac{\partial\gamma}{\partial x_1}dx_2, \quad [6.114]$$

which we may rewrite as

$$\partial\gamma\frac{dx_2}{dx_1}, \quad [6.115]$$

we obtain an expression that contains $\tan\theta$, that is,

$$\partial\gamma\frac{1}{\tan\theta}, \quad [6.116]$$

if dx_2 is chosen so that

$$\frac{dx_1}{dx_2} = \tan\theta. \quad [6.117]$$

Einstein, although his calculation is in the gravitational field, does not give this value, $\tan\theta$. Had he done so, since

$$\frac{dx_1}{dx_2} = \sqrt{\frac{g_{22}}{g_{11}}}\frac{dX_1}{dX_2}, \quad [6.118]$$

$\tan\theta$, if it exists, is either zero, in which case there is no bending, or finite, in which case the value differs from that in flat space-time.

Einstein's measure,

$$\frac{\partial\gamma}{\partial x_1}dx_2, \quad [6.119]$$

of the bending of light *in the gravitational field* corresponds to

$$\frac{\partial\Gamma}{\partial X_1}dX_2 = 0 \quad [6.120]$$

in the coordinates of flat space-time. In Einstein's expression for the velocity of light,

$$\gamma = \sqrt{\left(\frac{dx_1}{dx_4}\right)^2 + \left(\frac{dx_2}{dx_4}\right)^2 + \left(\frac{dx_3}{dx_4}\right)^2} = \sqrt{\frac{g_{44}}{g_{22}}}, \quad [6.121]$$

he considers dx_1 to be zero, whereas, in the expression for dx_4 *and* the expression for dx_2, r varies, which makes γ a function of x_1, which varies, so that dx_1 *cannot be zero*, contradicting the assumption that it vanishes. With Einstein's inverted $g_{\mu\mu}$'s, the velocity,

$$\gamma = \frac{dx_2}{dx_4} = \sqrt{\frac{g_{44}}{g_{22}}}\frac{dX_2}{dX_4}, \quad [6.122]$$

has the same form as

$$\frac{dX_2}{dX_4} = \sqrt{\frac{g_{44}}{g_{22}}}\frac{dx_2}{dx_4} = \sqrt{\frac{g'_{22}}{g'_{44}}}\frac{dx_2}{dx_4}, \quad [6.123]$$

where the $g'_{\mu\mu}$ are the actual, non-inverted $g_{\mu\mu}$. Thus, Einstein does not calculate

$$\frac{\partial}{\partial x_1}\frac{dX_2}{dX_4} = \frac{\partial}{\partial x_1}\left(\sqrt{\frac{g_{44}}{g_{22}}}\right)\frac{dx_2}{dx_4} + \frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\right)\sqrt{\frac{g_{44}}{g_{22}}} \quad [6.124]$$

since, using *the chain rule for partial derivatives on the right side*, the partial derivative on the left vanishes. Thus

$$\frac{\frac{\partial}{\partial x_1}\left(\sqrt{\frac{g_{44}}{g_{22}}}\right)}{\sqrt{\frac{g_{44}}{g_{22}}}} = -\frac{\frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\right)}{\frac{dx_2}{dx_4}}. \quad [6.125]$$

Even if the $g_{\mu\mu}$ are not the multiplicative inverse of the actual $g'_{\mu\mu}$'s *everywhere*, or, *anywhere*, the last equation holds. In fact, for $g'_{\mu\mu}$ are the actual, non-inverted $g_{\mu\mu}$, we must have

$$\frac{\frac{\partial}{\partial x_1}\left(\sqrt{\frac{g'_{22}}{g'_{44}}}\right)}{\sqrt{\frac{g'_{22}}{g'_{44}}}} = -\frac{\frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\right)}{\frac{dx_2}{dx_4}}; \quad [6.126]$$

however, as a cautionary note, we have yet *to set this up* or *to consider the aforementioned contradiction*.

With respect to the contradiction inherent in concluding that the light path is bent after assuming that it is not bent, we must take this into account in the expression for γ. After assuming the path is straight, Einstein remarks, without proving this, that "the total bending of the ray (calculated positively if concave towards the origin) is given in sufficient approximation by

$$B = \int_{-\infty}^{+\infty} \frac{\partial \gamma}{\partial x_1}\, \mathrm{dx}_2."$$

Finally, giving sequentially the rest of the argument, we have

"Unfortunately, the path of the light ray cannot be both straight and bent. The condition

$$dx_1 = 0 \quad [6.127]$$

is equivalent to the path of the light ray being straight. If the path is bent, we must have

$$\gamma = \sqrt{\left(\frac{dx_1}{dx_4}\right)^2 + \left(\frac{dx_2}{dx_4}\right)^2} \quad [6.128]$$

$$= \frac{dx_2}{dx_4}\sqrt{1 + \left(\frac{\frac{dx_1}{dx_4}}{\frac{dx_2}{dx_4}}\right)^2}$$

$$= \frac{dx_2}{dx_4}\sqrt{1 + \left(\frac{dx_1}{dx_2}\frac{dx_4'}{dx_4}\right)^2}$$

$$= \frac{dx_2}{dx_4}\sqrt{1 + \tan^2\theta} = \frac{dx_2}{dx_4}\sec\theta. \quad [6.129]$$

Thus

$$\tan\theta = \frac{dx_1}{dx_2} \quad [6.130]$$

appears naturally in the expression for γ, as measured in the coordinates of the gravitational field. Einstein puts *its* value at 0 in *his* expression for γ, *the partial derivative*, with respect to x_1, *of which* gives Einstein's value for the curvature of the light ray.

We have, for the *real* γ,

$$\frac{\partial\gamma}{\partial x_1} = \frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\sqrt{1 + \left(\frac{dx_1}{dx_2}\right)^2}\right)$$

$$= \sqrt{1 + \left(\frac{dx_1}{dx_2}\right)^2}\frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\right) + \frac{dx_2}{dx_4}\frac{\partial}{\partial x_1}\left(\sqrt{1 + \left(\frac{dx_1}{dx_2}\right)^2}\right). \quad [6.131]$$

Since

$$\frac{dx_1}{dx_2}$$

is decreasing,

$$\frac{\partial}{\partial x_1}\left(\sqrt{1+\left(\frac{dx_1}{dx_2}\right)^2}\right) > 0; \quad [6.132]$$

therefore,

$$\frac{\partial\gamma}{\partial x_1} > \sqrt{1+\left(\frac{dx_1}{dx_2}\right)^2}\,\frac{\partial}{\partial x_1}\left(\frac{dx_2}{dx_4}\right)$$

$$= \sqrt{1+\left(\frac{dx_1}{dx_2}\right)^2}\,\frac{\partial\gamma'}{\partial x_1}, \quad [6.133]$$

where γ' is Einstein's γ. Thus

$$-\partial\gamma/\partial n \neq -\partial\gamma'/\partial n \quad [6.134]$$

for

$$\frac{dx_1}{dx_2} \neq 0. \quad [6.135]$$

The ambiguity in the value of

$$\frac{dx_2}{dx_4}$$

in Einstein's γ arises from the ambiguity in the path of the light ray. This ambiguity results in a velocity that is not well-defined.

With the space-time coordinates *and* the value for $\frac{dx_1}{dx_2}$ that we have given, we obtain, *for a light ray*, corresponding to a light ray perpendicular to a radius in flat space-time, *in a gravitational field*, for γ the value

$$\gamma = \frac{dx_2}{dx_4}\sqrt{1+\left(\frac{dx_1}{dx_2}\right)^2}$$

$$= \frac{dx_2}{dx_4}\sqrt{1+\frac{1-\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)}{\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)}}$$

$$= \frac{dx_2}{dx_4}\sqrt{\frac{1}{\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)}}$$

$$= 1. \quad [6.136]"$$

The choice of space-time coordinates just above has

$$\frac{dx_2}{dx_4} = \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

corresponding to the velocity of light equal to $\frac{dX_2}{dX_4} = 1$ in the absence of gravitation. The right triangle having velocities for sides, *with the hypotenuse having velocity of light equal to 1 and length equal to the wavelength of the non-gravitational light-ray so that the frequency of the light ray along the hypotenuse has the same frequency, which we may as well consider to be 1, as the non-gravitational light ray*, has for the side perpendicular to a radius

$$\frac{dx_2}{dx_4} = \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

Thus, the side along the radius has for length, which is a velocity,

$$\frac{dx_1}{dx_4} = \left(\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

If $\frac{dx_1}{dx_4}$ is the velocity corresponding to the energy lost, as we originally had it, so that

$$\frac{dx_1}{dx_4} = \left(1 - \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}\right),$$

we have

$$\gamma = \frac{dx_2}{dx_4}\sqrt{1 + \left(\frac{dx_1}{dx_2}\right)^2}$$

$$= \frac{dx_2}{dx_4}\sqrt{1 + \frac{1 - 2\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}} + \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)}{\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)}}$$

$$= \frac{dx_2}{dx_4}\sqrt{2 - 2\frac{1}{\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}} + \frac{1}{\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)}}$$

$$= \sqrt{\left(\left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}\right)^2 + \left(1 - \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}\right)^2}$$

$$= 1." \quad [6.136']$$

To finish up, in *Quantum Gravity, Energy Wave Spheres and the Proton Radius*, pages 67-69, our copy, we wrote,

"Einstein's result from *On the Influence of Gravitation on the Propagation of Light* was that the frequency of light did not change:

"In *Influence*, Einstein argues, via the Doppler principle, that in a uniformly accelerated system K', light emitted at S_2 with frequency ν_2 has frequency ν_1 with respect to an identical clock at S_1 upon its arrival at S_1, the frequency given to a first approximation by

$$\nu_1 = \nu_2\left(1 + \gamma\frac{h}{c^2}\right). \quad [6.3]$$

By the principle of equivalence, this same equation holds to a first approximation in a system of coordinates K at rest in a homogeneous gravitational field. For γh, Einstein substitutes the gravitational potential Φ of S_2, with the gravitational potential of S_1 taken as zero, obtaining

$$\nu_1 = \nu_2\left(1 + \frac{\Phi}{c^2}\right). \quad [6.4]"$$

On what Einstein calls a "superficial consideration," this equation seems to assert an absurdity:

"If there is constant transmission of light from S_2 to S_1, how can any other number of periods per second arrive in S_1 than is emitted in S_2? But the answer is simple. We cannot regard n_2 or respectively n_1 simply as frequencies (as the number of periods per second) since we have not yet determined the time in system K. What n_2 denotes is the number of periods with reference to the time-unit of the clock U in S_2, while n_1 denotes the number of periods per second with reference to the identical clock in S_1. Nothing compels us to assume that the clocks U in different gravitational potentials must be regarded as going at the same rate. On the contrary, we must certainly define the time in K in such a way that the number of wave crests and troughs between S_2 and S_1 is independent of the absolute value of time; for the process under observation is by nature a stationary one. If we did not satisfy this condition, we should arrive at a definition of time by the application of which time would merge explicitly into the laws of nature, and this would certainly be unnatural and unpractical. Therefore, the two clocks in S_1 and S_2 do not both give the "time" correctly. If we measure the time in S_1 with the clock U, then we must measure the time in S_2 with a clock which goes $1+F/c^2$ times more slowly than the clock U when compared with U at one and the same place. For when measured by such a clock the frequency of the ray of light which is considered above is at its emission in S_2

$$\nu_2\left(1+\frac{\Phi}{c^2}\right)$$

and is therefore, by (2a), equal to the frequency n_1 of the same ray of light on its arrival in S_1."

This last quote is from *On the Influence of Gravitation of Light*, The Principle of Relativity, pages 105-106. Einstein considers the light frequency to be unchanged with the measured frequency in the gravitational field increasing by the factor

$$\left(1+\gamma\frac{h}{c^2}\right)$$

as the result of clocks slowing down by the same factor."

After these just finished lengthy quotes, we expected to make the case that $\frac{dx_1}{dx_4}$ is the velocity corresponding to the energy lost, as we originally had it, so that

$$\frac{dx_1}{dx_4}=\left(1-\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}\right),$$

and that light so bent is red shifted by the factor previously given, thus ruling out the non-red shifted case with

$$\frac{dx_2}{dx_4}=\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}$$

and with the length of the side, which is a velocity, along the radius

$$\frac{dx_1}{dx_4}=\left(\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

If the light perpendicular to the radius has remaining energy

$$\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{\frac{1}{2}}h\nu$$

with velocity $c=1$, then this perpendicular light ray is red shifted by the factor

$$\left(1-\frac{1}{c^2}\frac{\alpha}{r}\right)^{-\frac{1}{2}}.$$

By consideration of velocities on the sides of the resulting right triangle, the light along the hypotenuse is red-shifted by the factor

$$\left(1-2\beta(r)+2\big(\beta(r)\big)^2\right)^{-\frac{1}{2}}.$$

The problem with this reasoning is that the perpendicular light ray *is not* an energy wave sphere, for which the energy lost becomes its energy of motion. Because we had not yet considered *imaginary* energy wave spheres, as in the last part of *Classical Quantum Hidden Variable Gravitation*, we had no energy wave spheres to turn to, and at the end of *Classical Quantum Hidden Variable Gravitation*, we needed to take a break.

We are literally forced *since its time is at hand* to consider the case of an imaginary energy wave sphere inside the photon, this imaginary energy wave sphere losing the fraction

$$\frac{\alpha_M}{r}$$

of its energy. Once again, the fraction

$$\frac{\alpha_M}{r}$$

of the energy that the imaginary energy wave sphere with mass m *loses in the sense that* $d\mathcal{X}_4{}^2(r)$ *is negative with increasing absolute value* is the square $\left(\frac{v}{c}\right)^2$ of the ratio of its velocity $-v$ to c.

As we remarked in the Abstract to *Classical Quantum Hidden Variable Gravitation*,

“We extended the concept of energy wave spheres to imaginary energy wave spheres to explain the change in frequency of an energy wave sphere. The single expression,

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

of which we remarked *this is what has to be this way*, gives us the relationship between the wave velocities of the two types of energy wave spheres. The 1 in this expression for the rate of a unit energy wave sphere clock gives the clock rate squared of a unit energy wave sphere in the local system and $-\frac{\alpha}{r}$ gives the imaginary energy wave velocity function, $d\mathcal{X}_4$, squared of the particle with mass M at radius r, $d\mathcal{X}_4$ being the imaginary energy wave velocity function of the wave in an imaginary energy wave sphere with radius r and wave velocity

$$ic\left(\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

For an energy wave sphere with mass m and radius

$$r_m = \frac{\hbar}{mc}$$

and imaginary energy wave sphere with mass m with radius

$$\alpha_m = \frac{\kappa m}{4\pi}$$

inside that, the velocity, which is i times the absolute velocity of the energy wave sphere, of the wave in the imaginary energy wave sphere starts at 0 for infinite r, and for any $r > \alpha_M$, is equal to

$$cd\mathcal{X}_4(r) = ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}},$$

and for $r = \alpha_M$, equals

$$d\mathcal{X}_4(\alpha_M) = i,$$

the imaginary energy wave velocity function $d\mathcal{X}_4(\alpha)$ of the wave of the imaginary energy wave sphere, at radius α of a mass M. It has the same velocity as the wave of the imaginary energy wave sphere, the kernel, at radius α of a mass M. The energy wave sphere is transformed into the imaginary energy wave sphere. For $r > \alpha_M$, we have

$$0 + d\mathcal{X}_4{}^2(r) = 0^2 - \frac{\alpha_M}{r} = -\frac{\alpha_M}{r},$$

which shows the effect of the imaginary energy wave velocity function of a mass M on an imaginary energy wave sphere with mass m. The 0 on the left side of the last equation is clock rate of the imaginary energy wave sphere with mass m for infinite r and the square of this clock rate since its value is 0. The fraction

$$\frac{\alpha_M}{r}$$

of the energy that the imaginary energy wave sphere with mass m loses in the sense that $d\mathcal{X}_4{}^2(r)$ is negative with increasing absolute value is the square $\left(\frac{v}{c}\right)^2$ of the ratio of its velocity $-v$ to c." For a light ray perpendicular to a radius, the component of the velocity in the radial direction of the resulting *bent* light ray is

$$d\mathcal{X}_4(r) = -c\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}} = -v$$

With

$$cd\mathcal{X}_4(r) = ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

the velocity of the wave in the imaginary energy wave sphere. Since the resulting light ray would have a velocity of

$$(v^2 + c^2)^{\frac{1}{2}},$$

we must divide both of these velocities, the radial component and the perpendicular one, by

$$(v^2 + c^2)^{\frac{1}{2}}.$$

This is a sufficient condition for the resulting light ray to have velocity $c = 1$.

Apparently, the perpendicular light ray coming in, pre-bending, is different from the perpendicular component of the bent light ray coming out, which has a radial component, whereas the perpendicular light ray coming in has no radial component.

What we want, of course, is a description of physical reality, but we also want the incoming perpendicular light ray to not lose energy via an energy wave sphere *that it does not have* losing energy.

Going in, we have a perpendicular light ray with velocity $c = 1$ and frequency ν. The velocity of the wave in the imaginary energy wave sphere

$$cd\mathcal{X}_4(r) = ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}},$$

which amounts to a loss of energy from its 0 energy state at infinite r, results in a velocity of

$$-c\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

for the imaginary energy wave sphere, which is inside the photon.

Without any redshift, the square of the velocity of the resulting light ray is

$$c^2 + c^2\frac{\alpha_M}{r} = c^2\left(1 + \frac{\alpha_M}{r}\right),$$

so the resulting light ray must be red shifted by the factor

$$\left(1+\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

for its velocity to be $c = 1$. Once again, both the radial component and the perpendicular one of the resulting light ray are

$$(v^2+c^2)^{-\frac{1}{2}}$$

times the corresponding component of the non-red shifted light ray. For $\tan\theta$, we have

$$\tan\theta = \left(\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

Considering Einstein's relativity theories, which we have repeatedly shown to be blatantly false, and the constant stream of corruption, misinformation, propaganda, and lies supporting them by the institutions with big names and the physicists themselves with even bigger names, if that be possible, than the institutions. The fraud emanates from the top.

The statement *p implies q*, being logically equivalent to *(not p) or q*, is true whenever *p* is false so that *p implies q* true and *q* true do not imply that *p* is true; yet, in the eyes of the great physicists, from Einstein to whoever controls Harvard, testing the predictions, or implications, of a theory becomes a psychological tool for convincing the gullible of the correctness of the theory in the face of obvious contradictions to the theory.

In "Einstein's Theory of Gravitation," Center for Astrophysics, Harvard and Smithsonian, at the beginning, is stated:

"*Our modern understanding of gravity comes from Albert Einstein's theory of general relativity, which stands as one of the best-tested theories in science. General relativity predicted many phenomena years before they were observed, including black holes, gravitational waves, gravitational lensing, the expansion of the universe, and the different rates clocks run in a gravitational field. Today, researchers continue to test the theory's predictions for a better understanding of how gravity works.*"

The hyperlinks in the quotation just given go to the predictions of general relativity. The remaining prediction, the different rates clocks run in a gravitational field, has no hyperlink and, curiously, is obviously false, thus making it a direct refutation of general relativity. The predictions are based on the rate, which is the multiplicative inverse of the true clock rate, of a unit clock in a gravitational field.

As inconceivable as it is that someone might represent an unstated, false clock rate and hyperlinks to false theories based on that clock rate as true implications of the theory and assert that the testing of the implications of the theory gives a better understanding of how gravity works when the implications of the theory are false, understanding of how gravity works is *blocked* by Harvard and Smithsonian by doing just that.

The expression

$$1-\frac{\alpha}{r},$$

which is a function of r, is Einstein's value for g_{44}. We have

$$g_{44}{dx_4}^2 = {dX_4}^2,$$

or

$$\frac{dx_4}{dX_4}=\frac{1}{(g_{44})^{\frac{1}{2}}},$$

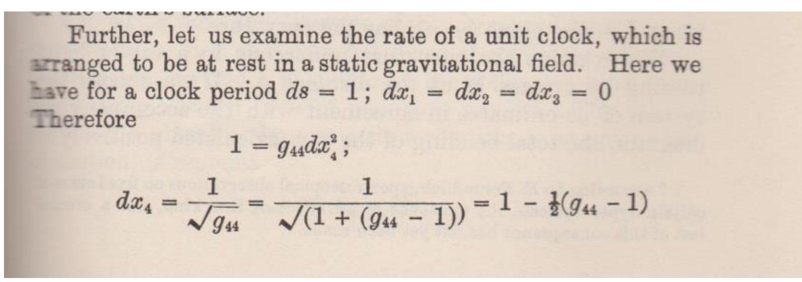
which is the rate of a unit clock at radius r in a gravitational field. Thus, Einstein's rate of a unit clock is *undefined* for $r = 0$ and $r = \alpha$. As r decreases approaching α,

$$1-\frac{\alpha}{r}$$

becomes arbitrarily small and r can be chosen so that

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$$

becomes arbitrarily small as well by continuity, so that its inverse, Einstein's rate of a unit clock, becomes arbitrarily large.


Further, let us examine the rate of a unit clock, which is arranged to be at rest in a static gravitational field. Here we have for a clock period $ds = 1$; $dx_1 = dx_2 = dx_3 = 0$
Therefore

$$1 = g_{44}dx_4^2;$$

$$dx_4 = \frac{1}{\sqrt{g_{44}}} = \frac{1}{\sqrt{(1+(g_{44}-1))}} = 1 - \tfrac{1}{2}(g_{44}-1)$$

Image 11: Scanned image from The Foundation of the General Theory of Relativity from The Principle of Relativity, Dover Publications, Inc., 1952, page 161.

Thus, for the time coordinate dx_4 corresponding to a clock period $ds = 1$ with $dx_1 = dx_2 = dx_3 = 0$, Einstein obtains

$$dx_4 = 1+\frac{\alpha}{2r}.$$

After giving this equation, Einstein, page 162, *The Principle of Relativity, The Foundation of the General Theory of relativity*, remarks, "Thus the clock goes more slowly if set up in the neighborhood of ponderable masses."

This last expression, which is Einstein's, is a poor approximation for dx_4 for r near α and decreasing since dx_4 is undefined at $r = \alpha$. In a bizarre misstatement, contrary to what is in plain sight, Einstein claims that a clock rate that becomes arbitrarily large, approaching ∞, goes more slowly in the neighborhood of ponderable masses.

In *Classical Quantum Hidden Variable Gravitation*, we extended the concept of energy wave spheres to imaginary energy wave spheres to explain the change in frequency of an energy wave sphere. In doing so, page 18, our copy, we considered a particle to be an energy wave sphere and, generalizing that, to be the clock rate function everywhere:

"The energy wave sphere, which exists, along with any other attributes the particle might have, *is the particle* corresponding to the energy wave sphere. The clock rate, or frequency, of the energy wave in the energy wave sphere *multiplied by Plank's constant* h is its energy

$$h\nu.$$

The next step, following the concept that the energy wave sphere is the particle, is to consider the clock rate function *everywhere* to be the particle. Since this frequency determines the gravitational motion of a material point, *the matter of how the particle*, which is now a frequency function, *achieves this* is explainable by considering the particle to be the frequency function."

The single expression

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

of which we remarked, "this is what has to be this way," literally gives us everything we need in that the expression reveals the clock rate of the energy wave sphere at radius r in terms of the clock rate 1 squared in the local system and the frequency function, which is imaginary, squared of the mass M; seeing this amount to a revelation.

The frequency function $d\mathcal{X}_4$ of the particle with mass M is given by

$$d\mathcal{X}_4 = i\left(\frac{\alpha}{r}\right)^{\frac{1}{2}} = i\left(\frac{1}{r}\frac{\kappa M}{4\pi}\right)^{\frac{1}{2}} = i\left(\frac{1}{r}\frac{2\mathrm{K}M}{c^2}\right)^{\frac{1}{2}}$$

so that

$$d\mathcal{X}_4{}^2 = -\frac{\alpha}{r},$$

where $\alpha = \frac{2\mathrm{K}M}{c^2}$, which is two times the gravitational constant K times the mass M divided by c^2 in units such that the velocity of light c is 1.

At $r = \alpha$, the value

$$-\frac{\alpha}{r}$$

of the frequency function squared is -1 and this quantity is the ratio

$$\frac{v^2}{c^2}$$

of the velocity squared of the wave of the imaginary energy wave sphere to the velocity squared of light. This tells us that the wave velocity of the imaginary energy wave sphere at radius α_M, the kernel of a mass M at radius α_M, is $ic = i$.

Along the way in the development, we saw that the velocity of the wave in an energy wave sphere decreased from $c = 1$ for infinite r to 0 at $r = \alpha$ with the possibility of imaginary values for this velocity for $r < \alpha$. The transformation of an energy wave sphere into an imaginary energy wave sphere with wave velocity *matching* that of the kernel of a mass M at radius α_M was not possible, so we placed an imaginary energy wave sphere, the kernel for the mass m of the energy wave sphere with radius α_m, inside the energy wave sphere, only later realizing that this imaginary energy wave sphere was what provided the force that held the energy wave sphere together. Without a place inside the kernel of a mass M at radius α_M for an energy wave sphere to go, an energy wave sphere should emerge from the other side of the kernel. Since the imaginary energy wave sphere inside an energy wave sphere, its kernel, with wave velocity matching that of the kernel of a mass M at radius α_M, becomes part of the kernel of a mass M at radius α_M, an energy wave sphere is no longer an energy wave sphere unless the energy wave sphere, its velocity $-c = -1$, becomes part of, with matching absolute velocity, the real kernel of the mass M at radius α_M.

At the end of *Classical Quantum Hidden Variable Gravitation*, we noted,
"We may as well regard *the imaginary energy wave sphere inside an energy wave sphere* as the *source* of the gravitational force that holds the wave of the energy wave sphere together. If the imaginary energy wave sphere inside an energy wave sphere does not get past the imaginary kernel of a mass M, then there is nothing to hold the wave, the velocity of which is 0 at α_M, of the energy wave sphere together. There is, however, seemingly nothing to prevent an imaginary energy wave sphere from starting up inside an energy wave sphere inside the imaginary kernel of a mass M, but once the imaginary energy wave sphere is gone, there is nothing to hold the energy wave sphere together.

An energy wave sphere with mass m *that makes it past the radius* α_M has

$$c\left(1-\frac{\alpha_M}{r}\right)^{\frac{1}{2}},$$

which is imaginary, for wave velocity, making it impossible to match the real wave velocity of the real kernel for a mass M. The only conceivable place to match the wave velocity of the real kernel of a mass M, where the wave velocity of the kernel is c and the velocity of the energy wave sphere, not its wave velocity, is $-c$, is at the radius α_M. The other remaining place for the energy wave sphere to go is to a discontinuity at radius 0, where its velocity and wave velocity are no longer defined.

A light ray with constant velocity $-c$ moving toward the imaginary kernel of a mass M along a radius has a real energy wave sphere with wave velocity 0 always. In the face of imaginary energy wave spheres with wave velocity

$$ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

along its path, the wave velocity of the energy wave sphere never becomes imaginary assuming any energy lost by the wave goes into the velocity of the energy wave sphere. This is the only clue that we have and the rule on *only clues* is to take them.

Taking the non-imaginary wave velocity clue amounts to assuming it holds for all real energy wave spheres and, as a consequence, that the absolute velocity of a real energy wave sphere cannot exceed c. Knowing that the source of this velocity is the energy wave sphere itself, we should have already concluded this anyway.

Thus, a real energy wave sphere always has a finite velocity and the singularity at $r = 0$ does not apply since the velocity is well-defined. Any imaginary energy wave sphere becomes part of the imaginary kernel at radius α_M, so the absolute velocity of an imaginary energy wave sphere is well defined and never exceeds c. As for a real kernel for the mass M for some radius $r < \alpha_M$, no real energy wave sphere has an imaginary energy wave sphere to hold it together for such a radius."

Meghan Bartels, in "Oppenheimer Almost Discovered Black Holes Before He Became 'Destroyer of Worlds'," *Scientific American*, July 21, 2023, considers, in a superficial way, Robert Oppenheimer and Hartland Snyder's paper, "On Continued Gravitational Contraction," as follows:

"Oppenheimer's climactic third paper, written with his student Hartland Snyder, explores the implications of general relativity on the universe's most massive stars. Although the physicists needed to include some assumptions to simplify the question, they determined that a large enough star would gravitationally collapse indefinitely—and within a finite amount of time, meaning that the objects we now know as black holes could exist.

"Eventually there should emerge what we would now call a singularity at the origin, a point of infinite density where, in some sense, spacetime itself rips, and there should become what we would now call an event horizon," says David Kaiser, a physicist and historian of science at the Massachusetts Institute of Technology. "This is all in that paper—not in the modern vocabulary, but the mathematics is absolutely recognizable to us today."

In the decades since Oppenheimer and Snyder's black hole bombshell, scientists have confirmed that the same principles hold even without the simplifying assumptions initially put in place. Thorne says that the paper is particularly staggering, given contemporary work from an even more famous physicist—the one who developed general relativity in the first place."

The same article gives another quote regarding the perfection of the Oppenheimer Snyder paper, ""It stands up completely; there are no flaws," says Kip Thorne, an emeritus professor of physics at the California Institute of Technology."

One might suppose that via the Schwarzschild metric, in which the value g_{44} for the time coordinate is the multiplicative inverse of its actual value, it is possible to obtain the notion of a black hole. As we noted previously,

"Einstein has space-time coordinates in the gravitational field given by a clock with rate

$$f = \left(1 - \frac{1}{c^2}\frac{\alpha}{r}\right)^{-\frac{1}{2}} \frac{sec'}{sec}, \quad [6.99]$$

the multiplicative inverse of the actual clock rate, and a distance coordinate, for the x coordinate aligned along a radius, given by, for a unit measure of length in flat space –time,

$$dx = 1 - \frac{\alpha}{2r}, \quad [6.100]$$

which gives a greater unit of distance rather than the smaller one claimed by Einstein *or* the actual unit of distance that does not change. Thus equipped, Einstein obtains *his* value, which we considered in Part 4, for the *curvature* of a ray of light."

The *Wikipedia* article, "Oppenheimer–Snyder model," begins with,

"In general relativity, the Oppenheimer–Snyder model is a solution to the Einstein field equations based on the Schwarzschild metric describing the collapse of an object of extreme mass into a black hole. [1] It is named after physicists J. Robert Oppenheimer and Hartland Snyder, who published it in 1939.[2]

During the collapse of a star to a black hole the geometry on the outside of the sphere is the Schwarzschild geometry. However, the geometry inside is, curiously enough, the same Robertson-Walker geometry as in the rest of the observable universe. [3]

History

Albert Einstein, who had developed his theory of general relativity in 1915, initially denied the possibility of black holes,[4] even though they were a genuine implication of the Schwarzschild metric, obtained by Karl Schwarzschild in 1916, the first known non-trivial exact solution to Einstein's field equations.[1] In 1939, Einstein published "On a Stationary System with Spherical Symmetry Consisting of Many Gravitating Masses" in the Annals of Mathematics, claiming to provide "a clear understanding as to why these 'Schwarzschild singularities' do not exist in physical reality."[4][5]

Months after the issuing of Einstein's article,[4] J. Robert Oppenheimer and his student Hartland Snyder studied this topic with their paper "On Continued Gravitational Contraction" making the opposite argument as Einstein's.[6][5] They showed when a sufficiently massive star runs out of thermonuclear fuel, it will undergo continued gravitational contraction and become separated from the rest of the universe by a boundary called the event horizon, which not even light can escape. This paper predicted the existence of what are today known as black holes.[1][7] The term "black hole" was coined decades later, in the fall of 1967, by John Archibald Wheeler at a conference held by the Goddard Institute for Space Studies in New York City;[7] it appeared for the first time in print the following year.[8] Oppenheimer and Snyder used Einstein's own theory of gravity to prove how black holes could develop for the first time in contemporary physics, but without referencing the aforementioned article by Einstein.[4] Oppenheimer and Snyder did, however, refer to an earlier article by Oppenheimer and Volkoff on neutron stars, improving upon the work of Lev Davidovich Landau.[7] Previously, and in the same year, Oppenheimer and three colleagues, Richard Tolman, Robert Serber, and George Volkoff, had investigated the stability of neutron stars, obtaining the Tolman-Oppenheimer-Volkoff limit.[9][10][11] Oppenheimer would not revisit the topic in future publications.[12]”

The claim that “they showed when a sufficiently massive star runs out of thermonuclear fuel, it will undergo continued gravitational contraction and become separated from the rest of the universe by a boundary called the event horizon, which not even light can escape” is false since Oppenheimer and Snyder only “should expect,” an expression they use twice, or should *assume* it to be true:

“We should now expect that since the pressure of the stellar matter is insufficient to support it against its own gravitational attraction, the star will contract, and its boundary r_b will necessarily approach the gravitational radius r_0. Near the surface of the star, where the pressure must in any case be low, we should expect to have a local observer see matter falling inward with a velocity very close to that of light; to a distant observer this motion will be slowed up by a factor $\left(1-\frac{r_0}{r_b}\right)$.”

Since Oppenheimer and Snyder take the line element outside the boundary r_b of the stellar matter to be

$$ds^2 = \left(1-\frac{r_0}{r}\right)dt^2 - \left(1-\frac{r_0}{r}\right)^{-1}dr^2 - r^2(d\theta^2 + \sin^2\theta d\varphi^2) \quad (1),$$

which is the Schwarzschild metric with g_{44} for the time coordinate the multiplicative inverse, corresponding to a faster clock, of the actual g_{44} for the time coordinate, the statement regarding what the local observer and the distant observer see is questionable. Near the surface of the star, the matter falling inward has a velocity close to that of light and that is what a distant observer sees. With the Schwarzschild metric clock and no change in the unit of distance, the time for the matter falling inward to travel a distance l is greater than the time, as measured by the distant clock, for the matter to travel the distance l by the factor $\left(1-\frac{r_0}{r_b}\right)^{-\frac{1}{2}}$. Thus, the local observer with the Schwarzschild metric clock and no change in the unit of distance measures the velocity of the matter falling inward as

$$c\left(1-\frac{r_0}{r_b}\right)^{\frac{1}{2}}.$$

With the actual clock rate, $\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$, corresponding to the ratio of the velocity of the wave in an energy wave sphere to c, and no change in the unit of distance, this velocity is

$$c\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}},$$

which becomes arbitrarily large as $r \searrow \alpha$. A measuring rod of length l for infinite r, no matter how the length changes along the way, will still be a measuring rod of length l for finite $r > \alpha$. With the Schwarzschild metric clock and the Schwarzschild distance coordinate along a radius, the length l, if aligned along a radius, will increase by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, but when measured with the Schwarzschild metric measuring rod, the length of which increases by the same factor, its length is just l *and* since the length compared to the distant length increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, the time for light to travel the distance l as measured by the Schwarzschild metric clock increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$ if the velocity of light increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, but the velocity of light is constant. Thus, the time for light to travel the distance l as measured by the Schwarzschild metric clock increases by two factors of $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$ or $\left(1-\frac{\alpha}{r}\right)^{-1}$ and the velocity with the Schwarzschild coordinates of the matter falling inward is

$$c\left(1-\frac{r_0}{r_b}\right).$$

The length of the measuring rod compared to the distant length increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, so that the time for light to travel this length with respect to the distant clock increases by the same factor. This time as measured by the clock at r_b increases by a second factor of $\left(1-\frac{r_0}{r_b}\right)^{-\frac{1}{2}}$. Thus, the measured velocity, with the Schwarzschild coordinates is equal to

$$\frac{dx_1}{dx_4}=\left(1-\frac{\alpha}{r}\right)\frac{dX_1}{dX_4},$$

with $\frac{dX_1}{dX_4}=c$.

The factor $\left(1-\frac{\alpha}{r}\right)$, the square of $\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$, in the expression for the velocity of light, or the velocity of the matter falling inward, arises because the absolute value of the coefficients, $\left(1-\frac{r_0}{r}\right)$ and $-\left(1-\frac{r_0}{r}\right)^{-1}$, in the expression (1) for the Schwarzschild metric are reciprocals of each other. The absolute values of these coefficients must be equal to obtain equality of the velocities so that

$$\frac{dx_1}{dx_4}=\frac{dX_1}{dX_4}=c.$$

No one bothered to tell Oppenheimer and Snyder, who cannot bother to explain how they get this.

For an observer comoving with the stellar matter, the time, as measured by the Schwarzschild metric clock, for this asymptotic isolation, the star closing itself off from any communication with a distant observer, is the same time as measured by a distant observer because the moving clock is slowed by the factor

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

but the Schwarzschild metric does not give the correct clock rate. With a slower clock with clock rate

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

the time for the asymptotic isolation to occur does become arbitrarily small since the measured velocity becomes arbitrarily large.

For all the confusion with respect to Oppenheimer and Snyder not knowing rate of a clock in a gravitational field, the statement, "Near the surface of the star, where the pressure must in any case be low, we should expect to have a local observer see matter falling inward with a velocity very close to that of light; to a distant observer this motion will be slowed up by a factor

$\left(1-\frac{r_0}{r_b}\right)$," is false since the velocities mentioned by Oppenheimer and Snyder are arbitrarily large and arbitrarily close to that of light, respectively.

For a paper without flaws, as Kip Thorne would have it, this defect of not having the actual space-time coordinates, with no consideration of coordinates in *should expecting* the star to contract, is fatal since inside the star, Oppenheimer and Snyder take the same line element (1), which does not give the actual space-time coordinates.

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produced by rotation, the line element outside the boundary r_b of the stellar matter must take the form

$$ds^2=e^\nu dt^2-e^\lambda dr^2-r^2(d\theta^2+\sin^2\theta d\varphi^2) \quad (1)$$

with $e^\nu=(1-r_0/r)$

and $e^\lambda=(1-r_0/r)^{-1}$.

Here r_0 is the gravitational radius, connected with the gravitational mass m of the star by $r_0=2mg/c^2$, and constant. We should now expect that since the pressure of the stellar matter is insufficient to support it against its own gravitational attraction, the star will contract, and its boundary r_b will necessarily approach the gravitational radius r_0. Near the surface of the star, where the pressure must in any case be low, we should expect to have a local observer see matter falling inward with a velocity very close to that of light; to a distant observer this motion will be slowed up by a factor $(1-r_0/r_b)$. All energy emitted outward from the surface of the star will be reduced very much in escaping, by the Doppler effect from the receding source, by the large gravitational red-shift, $(1-r_0/r_b)^{\frac{1}{2}}$, and by the gravitational deflection of light which will prevent the escape of radiation except through a cone about the outward normal of progressively shrinking aperture as the star contracts. The star thus tends to close itself off from any communication with a distant observer; only its gravitational field persists. We shall see later that although it takes, from the point of view of a distant observer, an infinite time for this asymptotic isolation to be established, for an observer comoving with the stellar matter this time is finite and may be quite short.

Inside the star we shall still suppose that the matter is spherically distributed. We may then take the line element in the form (1). For this line element the field equations are

$$-8\pi T_1^1=e^{-\lambda}(\nu'/r+1/r^2)-1/r^2, \quad (2)$$

$$8\pi T_4^4=e^{-\lambda}(\lambda'/r-1/r^2)+1/r^2, \quad (3)$$

$$-8\pi T_2^2=-8\pi T_3^3 =e^{-\lambda}\left(\frac{\nu''}{2}+\frac{\nu'^2}{4}-\frac{\nu'\lambda'}{4}+\frac{\nu'-\lambda'}{2r}\right) -e^{-\nu}(\ddot{\lambda}/2+\dot{\lambda}^2/4-\dot{\lambda}\dot{\nu}/4), \quad (4)$$

$$8\pi T_4^1=-8\pi e^{\nu-\lambda}T_1^4=-e^{-\lambda}\dot{\lambda}/r; \quad (5)$$

in which primes represent differentiation with respect to r and dots differentiation with respect to t.

The energy-momentum tensor T_ν^μ is composed of two parts: (1) a material part due to electrons, protons, neutrons and other nuclei, (2) radiation. The material part may be thought of as that of a fluid which is moving in a radial direction, and which in comoving coordinates would have a definite relation between the pressure, density, and temperature. The radiation may be considered to be in equilibrium with the matter at this temperature, except for a flow of radiation due to a temperature gradient.

We have been unable to integrate these equations except when we place the pressure equal to zero. However, one can obtain some information about the solutions from inequalities implied by the differential equations and from conditions for regularity of the solutions. From Eqs. (2) and (3) one can see that unless λ vanishes at least as rapidly as r^2 when $r\rightarrow 0$, T_4^4 will become singular and that either or both T_1^1 and ν' will become singular. Physically such a singularity would mean that the expression used for the energy-momentum tensor does not take account of some essential physical fact which would really smooth the singularity out. Further, a star in its early stage of development would not possess a singular density or pressure; it is impossible for a singularity to develop in a finite time.

If, therefore, $\lambda(r=0)=0$, we can express λ in terms of T_4^4, for, integrating Eq. (3)

$$\lambda=-\ln\left\{1-\frac{8\pi}{r}\int_0^r T_4^4 r^2 dr\right\}. \quad (6)$$

Therefore $\lambda\geqslant 0$ for all r since $T_4^4\geqslant 0$.

Now that we know $\lambda\geqslant 0$, it is easy to obtain some information about ν' from Eq. (2);

$$\nu'\geqslant 0, \quad (7)$$

since λ and $-T_1^1$ are equal to or greater than zero.

If we use clock time at $r=\infty$, we may take $\nu(r=\infty)=0$. From this boundary condition and Eq. (7) we deduce

$$\nu\leqslant 0. \quad (8)$$

The condition that space be flat for large r is

Above: converted image from "On Continued Gravitational Contraction"

Since the Schwarzschild metric is supposedly a solution, inside or outside the star, to the Einstein field equations, having that solution in hand, we should be done. Unfortunately, since the Schwarzschild metric does not provide the correct space-time coordinates, we are left with nothing and the value of giving arguments on the nature of a black hole based on Schwarzschild coordinates is nil.

No part of the physical reality of gravitation is what Einstein's general theory of relativity says it is. Material points do not move in geodetic lines in a gravitational field. Einstein's space-time coordinates are not correct. The Einstein tensor $G_{\mu\nu}$ is the zero tensor everywhere outside the black hole. Oppenheimer and Snyder, with the Schwarzschild solution to the equations of the geodetic line, cannot possibly give the reality inside a black hole.

Trivially, $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, Einstein's rate of a unit clock in a gravitational field, is greater than 1, the rate of a unit clock in the local system of coordinates. With the Schwarzschild coordinates, we have

$$\frac{dx_1}{dx_4} = \left(1-\frac{\alpha}{r}\right)\frac{dX_1}{dX_4},$$

which is decreasing in absolute value, for the velocity of a material point in a gravitational field. Since

$$\frac{\alpha}{r} = \frac{v^2}{c^2},$$

which gives velocity of a material point in the local system, the system without gravitational fields, the velocity of a material point is not constant in the local system of coordinates so that it does not move in a geodetic line.

An energy wave sphere clock, with clock rate

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

has a clock rate of 0 at $r = \alpha$. For $r \leq \alpha$, inside a black hole, there are no energy wave sphere clocks. With the Schwarzschild time coordinate, the rate of a unit energy wave sphere clock

$$\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$$

is ∞ for $r = \alpha$. With the Schwarzschild distance coordinate as well, the velocity of the wave in an energy wave sphere is

$$\left(1-\frac{\alpha}{r}\right)^{-1} c$$

for $r = \alpha$.

Einstein, Oppenheimer, and the others have no idea what an energy wave sphere clock is and no idea that within a black hole, there are no clocks. Without clocks, there is no time.

The ones who control the propaganda of the way things are do not control the way things are. There will always be obvious contradictions if the propaganda is false, and contradictions imply that the propaganda is false so that contradictions and the falsity of a theory are equivalent. Propaganda is that a false theory is true when evidence to the contrary is staring one down, forcing one to turn away to avoid truth. The ones who turn away are locked forever in the grid of disgust. The victims become the perpetrators who become the experts who are paid. The big awards are given by the society of the blind to the ones with the darkest distortion paint.

In the Preface to *Beyond the Veil*, Jeremy Dunning Davies writes,

"Having spent several years engaged in teaching and research in a university department, things took an unexpected dramatic turn following a chance meeting at a conference held at Gregynog in North Wales in 1987. It was at this meeting that one of us (JD) first met Bernard Lavenda. Shortly afterwards, we began considering the validity of the so-called Bekenstein Hawking expression for the entropy of a black hole. Various aspects of this expression caused us concern from a thermodynamical viewpoint. Accordingly, we wrote a short letter which appeared without any problem in the journal Classical and Quantum Gravity (5, L149, 1988). Since it was a letter announcing a new result, we followed it with a full length article which gave more precise details of our argument. This article was rejected but with no adequate reason for such rejection. Since then, our argument has never been even queried. Although not apparent immediately, this incident heralded a beginning of publishing problems for both of us. Over the intervening years Bernard Lavenda and JD have published numerous papers, jointly and separately, on the thermodynamics of black holes but, in all cases, having the articles accepted for publication was rarely straightforward. The same problem occurred in other areas also, such as when we pointed out errors in the original paper by Guth on the theory of inflation. The point raised here is that open scientific discussion was actively prevented by a person, or persons, unknown. It is important to note that it is not a case of one party arrogantly claiming itself to be definitely correct but rather being prevented from expressing an opinion. As David Bohm once said "Science is the search for truth, whether we like it or not". Such a search for truth must include exchange of ideas and subsequent discussion; without that science cannot progress satisfactorily.

During the years between then and now it has become increasingly obvious that the attitude mentioned is not confined to one or two areas of physics but to huge swathes of the subject. Some topics, such as Einstein's theories of relativity, the 'Big Bang' and black holes seem almost sacrosanct and may be critically considered only at the investigator's personal peril. Other areas, such as the work of Ruggero Santilli in Florida and the ideas of the so-called Electric Universe and Plasma Cosmology are seemingly held at arm's length, even though they may – if examined open mindedly and thoroughly – offer solutions to many outstanding problems facing scientists today. The pernicious effects of so-called 'conventional wisdom' in the areas mentioned were discussed at length in the earlier book. Here it is the intention to re-examine its influence in the light of more modern developments. The approach, though will be different in that each individual topic raised will be discussed in a totally self contained chapter. This will mean a degree of repetition of some items throughout the book but, hopefully, will make each chapter a more straightforward read."

The first time one discovers by thinking about it that some great postulate is false because of a contradiction, an alarm bell rings, yet the propaganda that the postulate is true pervades in the face of obvious evidence that contradicts it. As far as figuring this out, most will just consider the postulate to be true. When the process involves every significant postulate at which one looks with corresponding propaganda too, the entities that control this are considered to be evil when the dumbing of the crowd is at hand.

Years ago when we first considered the measured velocity of light in the moving system, we were aware that this matter had already been resolved beforehand by Einstein's principles or postulates *thinking that postulates in plain sight had to be true*. We analyzed the case that follows and blamed the problem that what we obtained for the velocity of light was not c on the Lorentz contraction since the postulated value for this velocity had to be c.

Given a length l moving with velocity v parallel to the length and a light ray moving in the opposite direction from one end of the length to the other, the time in the rest system for the light ray to traverse the length l is $l/(v+c)$. In the moving system, where the clocks move more slowly by the factor $1/\beta$, this time is $(1/\beta)(l/(v+c))$. If the length l is Lorentz contracted by the factor $1/\beta$, then the time in the rest system for the light ray to traverse the length, which is now $\frac{l}{\beta}$, is shortened by an additional factor of $1/\beta$ so that the time in the moving system is now $(1/\beta)^2(l/(v+c))$. This last value for the time in the moving system gives for the measured value of the velocity of the light ray in the moving system $\beta^2(v+c)$, which is not c or $v+c$ either. The only way to get $v+c$ is for the length l to get bigger by the factor β.

Like it or not, the length l is Lorentz contracted by the factor $1/\beta$, so the measured velocity of light in the moving system is $\beta^2(v+c)$, contradicting Einstein's second postulate and, hence, the first.

To consider a similar situation using Einstein's equations of the Lorentz transformation, we note in *Fast Clocks in the Moving System*, pages 8-9, our copy, that the Lorentz transformation for the distance coordinate is set up as follows:

"Further consideration of the equations of the Lorentz transformation is not necessary, but the equations cannot *by our analysis* be true: something must be wrong with the equations. In the case of the distance coordinate along the direction of motion, the equation is

$$\xi = \beta(x - vt), \quad [32]$$

where ξ is the distance coordinate in the moving system. In Einstein's derivation of the equation's of the Lorentz transformation, the distance coordinate x' of a point at rest in the moving system k *along the direction of motion* is given by

$$x' = x - vt, \quad [33]$$

where x is the coordinate of the moving point in the rest system:

"... it is clear that a point at rest in the system k must have a system of values x', y, z independent of time." He sets out to define τ as a function of x', y, z, and t, noting that "we have to express in equations that τ is nothing else than the summary of data of clocks at rest in system k, which have been synchronized according to the rule given in § 1.""

"Since lengths in the moving system are Lorentz contracted by a factor of $1/\beta$, the coordinate x' is, assuming the origin of the distance coordinates of the rest system and the moving system coincide when $t = 0$, $1/\beta$ times the length x'' of the measuring rod, *which when placed in the moving system the right endpoint of which is x' and the left endpoint of which is* 0, in the rest system. Thus

$$\xi = \beta(x - vt)$$

$$= \beta x'$$

$$= \beta \frac{1}{\beta} x''$$

$$= x'', \quad [36]$$

and the length of the moving measuring rod in the distance coordinate of the moving system is just the length of the measuring rod at rest in the rest system."

Continuing with the development on page 12 of *Fast Clocks*, we note.

"*Suppose in what follows* that $\tau = 0$ when $t = 0$ and that $t = 0$ when $x' = 0$ and $\xi = 0$ coincide. The final discovery, which we knew all along or should have known all along, following from the constancy of the velocity of light c in the moving system, is that, for a light ray emitted from the origin of the system k and arriving at ξ at time τ,

$$\xi = c\tau. \quad [44]$$

We have

$$\xi = \beta(x - vt) = \beta(ct - vx/c)$$

$$= c\beta(t - vx/c^2)$$

$$= c\tau. \quad [45]$$

Thus, working backwards,

$$c\tau = \beta(ct - vx/c)$$

$$= \beta(c - v)t$$

$$= c\beta(1 - v/c)t. \quad [46]$$

This gives

$$\tau = \beta(1 - v/c)t." \quad [47]$$

The distance in the rest system that the light travels, since the length of the moving measuring rod is Lorentz contracted, is

$$ct = \frac{1}{\beta}x'' + vt,$$

so that

$$t = \frac{1}{\beta}\frac{x''}{c - v}$$

and

$$\tau = \left(\frac{1}{\beta}\right)^2 \frac{x''}{c - v}.$$

Thus the velocity of the light ray in the moving system is

$$\beta^2(c - v).$$

Since x is the coordinate in the rest system of a point at rest in the moving system k and

$$x' = x - vt, \quad [33]$$

we have

$$x' = x$$

when $t = 0$, but since

$$x = x'' + vt$$

for some x'', we must have when $t = 0$,

$$x' = x''.$$

Thus

$$x' = x'' + vt - vt = x''$$

for all t. Thus, the Lorentz transformation for the distance coordinate is

$$\xi = \beta x''$$

and the Lorentz transformation for the time coordinate is

$$\tau = \frac{\xi}{c} = \beta \frac{x''}{c} = \beta t,$$

which is a faster clock since

$$\beta = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} > 1.$$

By expressing the Lorentz transformation for the distance coordinate as

$$\xi = \beta(x - vt),$$

Einstein obtains

$$\tau = \frac{\xi}{c} = \frac{\beta(x - vt)}{c} = \beta\left(t - \frac{vx}{c^2}\right)$$

for the Lorentz transformation of time coordinate. Setting $x = vt$, which is equivalent to $x'' = 0$, Einstein gets

$$\tau = \beta\left(1 - \frac{v^2}{c^2}\right)t = \sqrt{1 - \frac{v^2}{c^2}}\,t,$$

which supposedly, according to Einstein, implies that the moving clock is slower than the rest clock by the factor

$$\sqrt{1 - \frac{v^2}{c^2}};$$

but since $x'' = 0$, we have

$$t = \frac{x''}{c} = 0$$

and, hence,

$$\tau = 0.$$

Since, by postulate, the ratio of the distance coordinate to the time coordinate is the velocity of light c, any change by some factor k in the unit of distance is accompanied by a corresponding change by the same factor k in the unit of time so that the ratio of the coordinates is c. If the unit of distance gets smaller, then the unit of time gets smaller by the same factor so that the ratio of the two coordinates is c. On the other hand, since the velocity of light in the postulate is the *measured* velocity of light and the measured unit of distance, the result of Einstein's operation (a), in the moving system is the same, by Einstein's argument, as in the rest system by the principle of relativity, the measured unit, the period of a light clock, in the moving system of a parallel light clock at rest in the moving system cannot change from its value in the rest system. In reality, contrary to postulate, a light clock with velocity v parallel to its length has a period, its unit of time, that gets bigger by the factor

$$\beta^2 = \frac{1}{1 - \frac{v^2}{c^2}},$$

so that it is slower by two factors of $\sqrt{1 - \frac{v^2}{c^2}}$. The contraction of the length of the parallel light clock by the factor $\sqrt{1 - \frac{v^2}{c^2}}$, the Lorentz contraction, decreases its period by the factor $\sqrt{1 - \frac{v^2}{c^2}}$, resulting in a period that gets bigger by only the single factor

$$\beta = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

so that the parallel light clock is slower by the factor $\sqrt{1 - \frac{v^2}{c^2}}$, the same rate as the perpendicular light clock. On an atomic level, the perpendicular and parallel energy wave sphere clocks have the same period.

One can only wonder what evil force dictates those in control, from universities, books, scientific journals, media propaganda, the supposedly great minds, and any poisonous entity that we may have missed, to promote their obscenely false theories when they obscure and turn in to darkness any reasonable view of what is going on. The evil lies within them.

If, for a physicist, heaven lies in ones grasp exceeding ones reach, to rephrase Robert Browning, then, literally, physics has gone to hell.

Considering the lack of any real energy wave sphere with wave energy to lose with non-zero wave velocity inside the photon and a cosmological redshift to be accounted for, we reflect on the case of an imaginary energy wave sphere, introduced in *Classical Quantum Hidden Variable Gravitation*, inside the photon, “We are literally forced since its time is at hand to consider the case of an imaginary energy wave sphere inside the photon, this imaginary energy wave sphere losing the fraction

$$\frac{\alpha_M}{r}$$

of its energy. Once again, the fraction

$$\frac{\alpha_M}{r}$$

of the energy that the imaginary energy wave sphere with mass m *loses in the sense that* $d\mathcal{X}_4{}^2(r)$ *is negative with increasing absolute value* is the square $\left(\frac{v}{c}\right)^2$ of the ratio of its velocity $-v$ to c.”

Going in, we have a perpendicular light ray with velocity $c = 1$ and frequency ν. The velocity of the wave in the imaginary energy wave sphere

$$cd\mathcal{X}_4(r) = ic\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}},$$

which amounts to a loss of energy from its 0 energy state at infinite r, results in a velocity of

$$-c\left(\frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

for the imaginary energy wave sphere, which is inside the photon.

Without any redshift, the square of the velocity of the resulting light ray is

$$c^2 + c^2\frac{\alpha_M}{r} = c^2\left(1 + \frac{\alpha_M}{r}\right),$$

so the resulting light ray must be red shifted by the factor

$$\left(1 + \frac{\alpha_M}{r}\right)^{\frac{1}{2}}$$

for its velocity to be $c = 1$. Once again, both the radial component and the perpendicular one of the resulting light ray are

$$(v^2 + c^2)^{-\frac{1}{2}}$$

times the corresponding component of the non-red shifted light ray. For $\tan\theta$, we have

$$\tan\theta = \left(\frac{\alpha}{r}\right)^{\frac{1}{2}}.$$

Of the Oppenheimer-Snyder paper, "On Continued Gravitational Contraction," we write,

The claim that "they showed when a sufficiently massive star runs out of thermonuclear fuel, it will undergo continued gravitational contraction and become separated from the rest of the universe by a boundary called the event horizon, which not even light can escape" is false since Oppenheimer and Snyder only "should expect," an expression they use twice, or should *assume* it to be true:

"We should now expect that since the pressure of the stellar matter is insufficient to support it against its own gravitational attraction, the star will contract, and its boundary r_b will necessarily approach the gravitational radius r_0. Near the surface of the star, where the pressure must in any case be low, we should expect to have a local observer see matter falling inward with a velocity very close to that of light; to a distant observer this motion will be slowed up by a factor $\left(1-\frac{r_0}{r_b}\right)$."

Since Oppenheimer and Snyder take the line element outside the boundary r_b of the stellar matter to be

$$ds^2 = \left(1-\frac{r_0}{r}\right)dt^2 - \left(1-\frac{r_0}{r}\right)^{-1}dr^2 - r^2(d\theta^2 + \sin^2\theta d\varphi^2) \quad (1),$$

which is the Schwarzschild metric with g_{44} for the time coordinate the multiplicative inverse, corresponding to a faster clock, of the actual g_{44} for the time coordinate, the statement regarding what the local observer and the distant observer see is questionable. Near the surface of the star, the matter falling inward has a velocity close to that of light and that is what a distant observer sees. With the Schwarzschild metric clock and no change in the unit of distance, the time for the matter falling inward to travel a distance l is greater than the time, as measured by the distant clock, for the matter to travel the distance l by the factor $\left(1-\frac{r_0}{r_b}\right)^{-\frac{1}{2}}$. Thus, the local observer with the Schwarzschild metric clock and no change in the unit of distance measures the velocity of the matter falling inward as

$$c\left(1-\frac{r_0}{r_b}\right)^{\frac{1}{2}}.$$

With the actual clock rate, $\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}}$, corresponding to the ratio of the velocity of the wave in an energy wave sphere to c, and no change in the unit of distance, this velocity is

$$c\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}},$$

which becomes arbitrarily large as $r \searrow \alpha$. A measuring rod of length l for infinite r, no matter how the length changes along the way, will still be a measuring rod of length l for finite $r > \alpha$. With the Schwarzschild metric clock and the Schwarzschild distance coordinate along a radius, the length l, if aligned along a radius, will increase by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, but when measured with the Schwarzschild metric measuring rod, the length of which increases by the same factor, its length is just l *and* since the length increases by the factor $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$, the time for light to travel the distance l as measured by the Schwarzschild metric clock increases by two factors of $\left(1-\frac{\alpha}{r}\right)^{-\frac{1}{2}}$; thus, with Schwarzschild metric units for distance and time, the measured velocity of the matter falling inward is

$$c\left(1-\frac{\alpha}{r}\right).$$

For an observer comoving with the stellar matter, the time, as measured by the Schwarzschild metric clock, for this asymptotic isolation, the star closing itself off from any communication with a distant observer, is the same time as measured by a distant observer because the moving clock is slowed by the factor

$$\left(1-\frac{\alpha}{r}\right)^{\frac{1}{2}},$$

but the Schwarzschild metric does not give the correct clock rate.

Of the Lorentz transformation for the time coordinate, we show that the time coordinate τ is that of a faster clock, as follows:

Since x is the coordinate of the moving point in the rest system and

$$x' = x - vt, \quad [33]$$

we have

$$x' = x$$

when $t = 0$, but since

$$x = x'' + vt$$

for some x'', we must have when $t = 0$,

$$x' = x''.$$

Thus,

$$x' = x'' + vt - vt = x''$$

for all t. Thus, the Lorentz transformation for the distance coordinate is

$$\xi = \beta x''$$

and the Lorentz transformation for the time coordinate is

$$\tau = \frac{\xi}{c} = \beta \frac{x''}{c} = \beta t,$$

which gives faster clock since

$$\beta = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} > 1.$$

The first time one discovers by thinking about it that some great postulate is false because of a contradiction, an alarm bell rings, yet the propaganda that the postulate is true pervades in the face of obvious evidence that contradicts it. As far as figuring this out, most will just consider the postulate to be true. When the process involves every significant postulate at which one looks with corresponding propaganda too, the entities that control this are considered to be evil when the dumbing of the crowd is at hand.

Years ago when we first considered the measured velocity of light in the moving system, we were aware that this matter had already been resolved beforehand by Einstein's principles or postulates *thinking that postulates in plain sight had to be true*. We analyzed the case that follows and blamed the problem that what we obtained for the velocity of light was not c on the Lorentz contraction since the postulated value for this velocity had to be c.

Given a length l moving with velocity v parallel to the length and a light ray moving in the opposite direction from one end of the length to the other, the time in the rest system for the light ray to traverse the length l is $l/(v + c)$. In the moving system, where the clocks move more slowly by the factor $1/\beta$, this time is $(1/\beta)(l/(v + c))$. If the length l is Lorentz contracted by the factor $1/\beta$, then the time in the rest system for the light ray to traverse the length, which is now $\frac{l}{\beta}$, is shortened by an additional factor of $1/\beta$ so that the time in the moving system is now $(1/\beta)^2(l/(v + c))$. This last value for the time in the moving system gives for the measured value of the velocity of the light ray in the moving system $\beta^2(v + c)$, which is not c or $v + c$ either. The only way to get $v + c$ is for the length l to get bigger by the factor β.

Of course, the problem was not the Lorentz contraction, but Einstein's principles, which were never true. The dying of Einstein's principles, the one about the same laws of physics holding in systems that are in uniform translatory motion and the other, taken to be a law, about the velocity of light being the constant c, gives one access to the light of free thought, which was always suppressed. To quote Dylan Thomas,

"Do not go gentle into that good night.
Rage, rage against the dying of the light."

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