Shaking up the theory of the Expanding Universe
Gravity, Time, and Redshift According to Obstruction Theory

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Abstract

Obstruction Theory offers an alternative to the Newton/Einstein theory for cosmology. Assuming a rarefied mass density in the universe, the redshift we observe in distant light sources can be explained without assuming that the sources are moving away from us at high speed, causing the universe to expand. The redshift can be easily explained by the average mass density of the universe.
It is known that a mass slows down the velocity of time at a point in its vicinity. This slowdown turns out to be equal to the reduction of direct radiation from more distant space due to the presence of the mass. We show that the amount of direct radiation reaching an observer from the universe is always partially lost along the way through scattering by protons and other small particles. This translates into the velocity of time, which we observe as redshift.
We find the size of our visible universe by stating that the observed time velocity of the light sources at the boundary of the universe is reduced to zero. The value for the size that we find via a simple calculation is close to the value found in the traditional way. Furthermore, with this theory, a value for the Hubbleconstante can be found using the mass density of the universe.
According to Obstruction Theory, there can furthermore be no question of a bounded universe. Every observer is the center of their own universe. Beyond its own universe, the universe extends infinitely far.

Keywords: Time Dilation; Gravity; Obstruction Theory; Red Shift; Hubbleconstante; Size of Universe; Newton /Einstein alternative

1 Introduction

Every physicist or astronomer who delves into the theory of the cosmos will at some point wonder whether the ideas about 'the expansion of the universe' or the 'Big Bang' are realistic. To date, however, no acceptable theories have emerged that can serve as a full-fledged replacement for the theories of Einstein and Newton.
In this article, however, we present an alternative that can meet expectations. We have given this the name Obstruction Theory. In previous articles on the Vixra website, we have already provided examples of a successful explanation of the anomalous acceleration of the Pioneers [1]**)** and the anomalous velocity of Comet Oumuamua [2]**)** using this theory.
Both the traditional and this Obstruction Theory are based on a theory of gravity. In Einstein's General Theory of Relativity, Newton's theory of gravitation is applied without modification. In this theory, an object in the gravitational field of a mass experiences a force as if the field were pulling the object towards the mass with invisible cables.
In Obstruction Theory, we show that gravity around a mass is directly related to the time dilation in the space around the mass. This time dilation, in turn, turns out to be related to the extent to which the mass manages to shield the observer from direct radiation from space.

On page 3, we will demonstrate that the ***solid angle*** occupied by a mass, viewed from the point where the observer is located, is related to the ***time dilation*** at that location.
Since the solid angle is determined by the dimensions of the region that blocks the passage of radiation to the observer, we can conclude that the speed of time, and time in general, is a ***geometric quantity***.

We know the concept of time dilation from special relativity: time in a (fast) moving system ticks away more slowly than in the stationary system from which the moving system is observed. An event in the moving system shows more time on the clock of the stationary observer than on the clock of the co-moving observer.

This is a reciprocal effect: if the clock in the stationary system is observed from the moving system, one sees that the clock in the (so-called) stationary system runs slower because, from the observers perspective, it is actually moving.
We call this the ***relativity of velocity***. See p. 8.
However, that does not apply to time dilation in a gravitational field of a mass; there, the clock actually ticks slower than for observers at a great distance from the mass. We will return to that.

The speed at which time elapses for the observer plays no role in the course of a physical event. An event in a stationary system, viewed from a fast-moving vehicle where time passes faster according to the moving observers than in the stationary system, or viewed conversely from a point in a strong gravitational field, where time is slower than in the stationary system, remains the same event.

According to the various observers, a glass that shatters will break into just as many pieces, and the pieces will also fly away in the same directions. According to the observers in the vehicle, the event unfolds more slowly than if the identical event were to occur in their system. In the gravitational field, it will be difficult to replicate the identical event because the falling speed behaves differently there. It is difficult for us to make the conditions equal.

In an area with slowed time, an event therefore proceeds more slowly, but the clock at that location also runs slower, so that according to an observer present, the event proceeds at exactly the same speed on their clock as in a system with a different time velocity. You might think that you therefore cannot measure that time runs more slowly in another system, but that is not the case. We can, in fact, simply ***look at*** an event in another system.
For an event on a high-speed train, our clock shows more time than the clock on the train because our clock ticks faster. The observers at the different clocks can tell each other this, or we can show it to each other if we use large clocks or set up a video connection.

This even applies to the light with which the event is viewed. It works like this: the light we perceive is emitted at a certain number of waves per second, but in our system, where time moves faster, it turns out to contain fewer waves per (shorter) second than what was emitted per (longer) second.
This lower frequency means a (small) shift of the color towards red. A surface that has the color yellow in our system, when placed in the high-speed train, also has the color yellow for the passengers present there. However, if one of the passengers holds the surface in front of the windows so that we can see it along the track, close observation will show that the color of the surface has shifted slightly towards red, because we receive fewer waves per second during our shorter second.

In this article, we will examine the redshift occurring in the light of distant light sources from a physics perspective, using the Obstruction Theory. This is associated with the name of **Edwin Hubble**, who showed that the color of light sources shifts more towards red the further away they are. The redshift represents the time dilation of the light of those distant light sources.

Established science explains this by stating that the time dilation is caused by the speed of light sources. The conclusion drawn from this is that the universe is expanding, meaning that all distances in space are growing apart at a certain rate. A galaxy located at a distance of r meters will be Δr meters further away after a year. For a system at twice the distance, the distance has increased by $2\Delta r$ meters after a year. The speed at twice the distance has therefore become twice as high. It is therefore assumed that the speed increases when we observe a light source at an increasing distance.

However, this obvious explanation—with enormous consequences—is debatable. Using Obstruction Theory, we demonstrate that another explanation is more plausible.

- **Edwin Hubble** himself never endorsed the idea of an expanding universe. We fully support him on this issue.

2 The solid angle and the time dilation

The size of the solid angle occupied by an object with mass M—if by that we mean the region that blocks radiation directed directly at the observer—is not easy to determine. We cannot use the dimensions of that object for this purpose, because the same mass in the form of a gas has much larger dimensions than in the form of a solid. There is only one form in which a mass has an unambiguous dimension, namely as a ***black hole***.

The generally accepted formula for the radius R_0 of a (spherical) black hole with a mass M is $R_0 = 2\frac{GM}{c^2}$ meters.
Here, G is the gravitational constant with $G = 6{,}67\text{x}10^{-11}$ $m^3/kg.s^2$ and
the speed of light is $c=3\text{x}10^8$ m/sec.
As a black hole, the Sun, for example, with $M = 1{,}99\text{x}10^{30}$ kg, has a radius of **2950** meter.
The Moon, with $M= 7{,}35\text{x}10^{22}$ kg, has a tiny radius of **0,109** mm. Proportional to the mass!

We assume that a black hole is impenetrable to anything. However, a black hole is very small. Therefore, the time dilation cannot be explained by this. Fortunately, it turns out that there is a much larger region around the black hole that prevents the radiation from reaching the observer directly. This is due to the deflection of the radiation around the black hole. That region is the area within the ***Einstein ring*** (Fig.1), which we can imagine around every black hole. We have called this region the ***black spot*** around the black hole.

For the radius of the Einstein ring of a mass at the distance r, the formula
$R_{ring} = \sqrt{2R_0 r}$ meters applies. (see box p.6)
The solid angle occupied by the black spot is $\omega_{vlek} = \pi \frac{R_{ring}^2}{r^2} = 2\pi \frac{R_0}{r} = 4\pi \frac{GM}{c^2}\frac{1}{r}$ sr.
The total solid angle occupied by the ***celestial sphere*** is 4π sr.
Of this, the solid angle of the Einstein ring generally occupies a small portion,
namely: $\frac{2\pi}{4\pi}\frac{R_0}{r} = \frac{1}{2}\frac{R_0}{r}$ sr/sr.
With the expression for $R_0 = 2\frac{GM}{c^2}$, this becomes $\frac{GM}{c^2}\frac{1}{r}$ sr/sr.

This is striking; it is exactly the expression Einstein found for the time dilation (***TDT***) at a distance r from a mass: $TDT = \frac{GM}{c^2}\frac{1}{r}$ sec/sec.

The time dilation at a point near a mass therefore indicates the extent to which this point is shielded by the mass from direct radiation from distant space.

3 Gravity

The Obstruction Theory provides an answer to the question of why two masses attract each other. Put differently: why do two freely moving masses accelerate towards each other?
The answer lies in the observation that an object in the vicinity of a mass experiences a variation in the velocity of time across the objects body.
In this line of thought, we assume that a freely moving object strives to move in space in such a way that time has the same time speed over the entire object.
We can understand this as follows: an object located far from any mass in a state of constant physical velocity (which can also be **v = 0**) will have the same time speed over its entire own volume. Such an identical object located near a mass will observe a difference in the velocity of time between different points on the object as a sign of the presence of that mass. On the side where the mass is located, the time speed is slower than on the other side of the same object. Consequently, certain chemical processes will proceed slower on one side of the object than on the other.
Since there is no physical connection between the object and the mass, there is no reason why this object distinguishes itself from the object located far from any mass. According to this philosophical line of thought, the freely moving object must move in such a way that the velocity of time over the object is constant!
The object achieves this by accelerating in the direction of the velocity gradient. As a result, the differences in time velocity due to the gravitational field in which the object is located are compensated by the differences in time velocity due to its acceleration. See the box below for an explanation.
This clarifies the phenomenon of **gravity**.

Mathematically, it can be demonstrated that the resultant of the gravitational force of a solid sphere is directed towards the center of the sphere. Therefore, as soon as we release a stone as a freely moving object, it will accelerate towards the center of the Earth so the velocity of time over the stone is constant!
A planet orbiting the Sun also exhibits continuous acceleration in the Sun's field of velocity-of-time such that the velocity of time over the planet remains as constant as possible.

Explanation: The difference in time velocity over a radial distance difference ℓ in the gravitational field of a mass $\boldsymbol{M}$ is $\frac{GM}{c^2}\frac{1}{r}-\frac{GM}{c^2}\frac{1}{r+\ell}\approx\frac{GM}{c^2}\frac{\ell}{r^2}=\frac{g\ell}{c^2}$ sec/sec. The front point closer to the mass therefore has a time velocity that is slower than the rear point by the stated value.
When an object of length ℓ experiences an acceleration $\boldsymbol{g}$, regardless of how the acceleration is generated, the clock at the front point, observed from the rest frame, will have a time velocity one $\frac{g\ell}{c^2}$ sec/sec [3]**)** higher than the clock at the rear point.
Conclusion: In the gravitational field, the acceleration of an object exactly compensates for the lower time velocity experienced by the front point in the field relative to the rear point, with the result that the time velocity is constant over the object.

From this philosophical perspective, no force is required for this acceleration because, according to Obstruction Theory, space has no physical properties. The object is simply in a state of acceleration. It is its natural motion. Preventing that motion does require force, however; that is the force we call **gravity**.

4 The size of the obstruction

In our theory, the obstruction that a mass poses to the observation of direct light or radiation from the universe plays a central role. This concerns the ***black spot*** enclosed by the Einstein ring around the black hole. For any mass, no matter how small or large, we can imagine an Einstein ring according to the formula in the box on p.3. This is clarified in Figure 1.

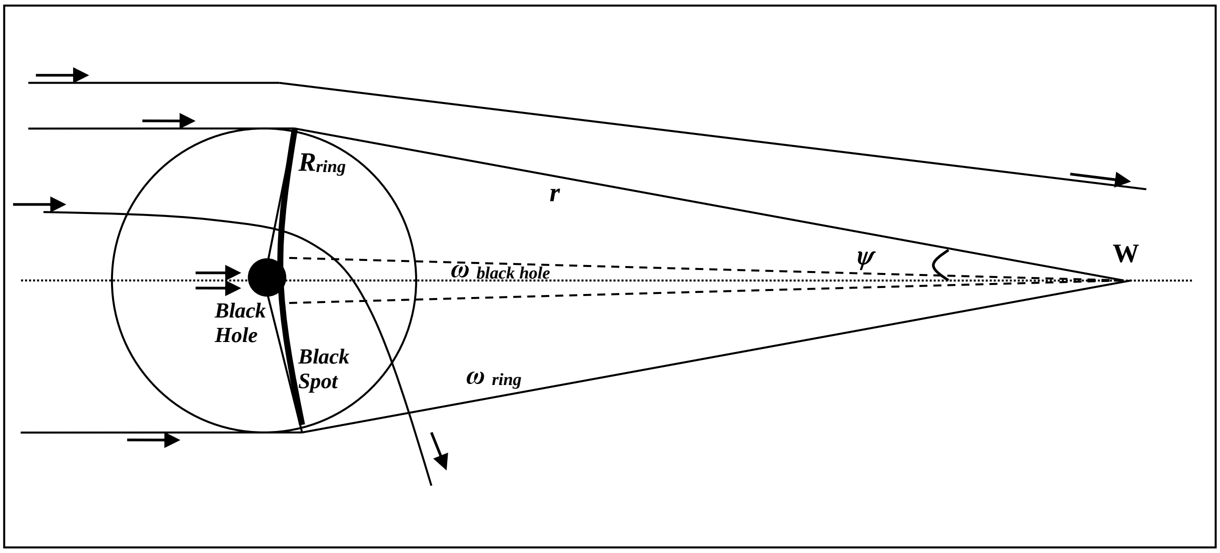

Figure 1 The black spot around the black hole in the Einstein Ring.

A parallel beam of light from the left passing the black hole is deflected so strongly when passing the mass at a short distance that the light cannot reach observer **W** – see the downward plunging line in the figure – but when passing at a great distance, the light from the beam is deflected so little that it does not reach observer **W** either, see the top line in the figure.
Only light rays from a parallel beam passing the black hole at a sharply defined distance $\boldsymbol{R_{ring}}$ can enter **W**. That light is focused in **W**. Light from the beam passing the black hole at a smaller distance then $\boldsymbol{R_{ring}}$ does not reach the observer. For light from distant space, this forms a ***black spot*** for the observer **W**. He receives no information from outside that region.

We see many examples of these Einstein rings in detailed photographs taken with modern telescopes. A condition for the visibility of the Einstein ring in the photograph (Fig. 2) is that one or more strong light sources are located behind the black spot that are not visible, but whose presence is made known thanks to the ring.

Of the light sources located behind the black spot, practically no light can reach the observer **W**. Therefore, there is no light that can reach the observer at an angle smaller than ψ (Fig 1). Light that can still reach the observer via the black spot originates from sources located outside the solid angle $\boldsymbol{\omega_{ring}}$, and of which the observed light must be interpreted as scattered light. See the box for the corresponding formulas.

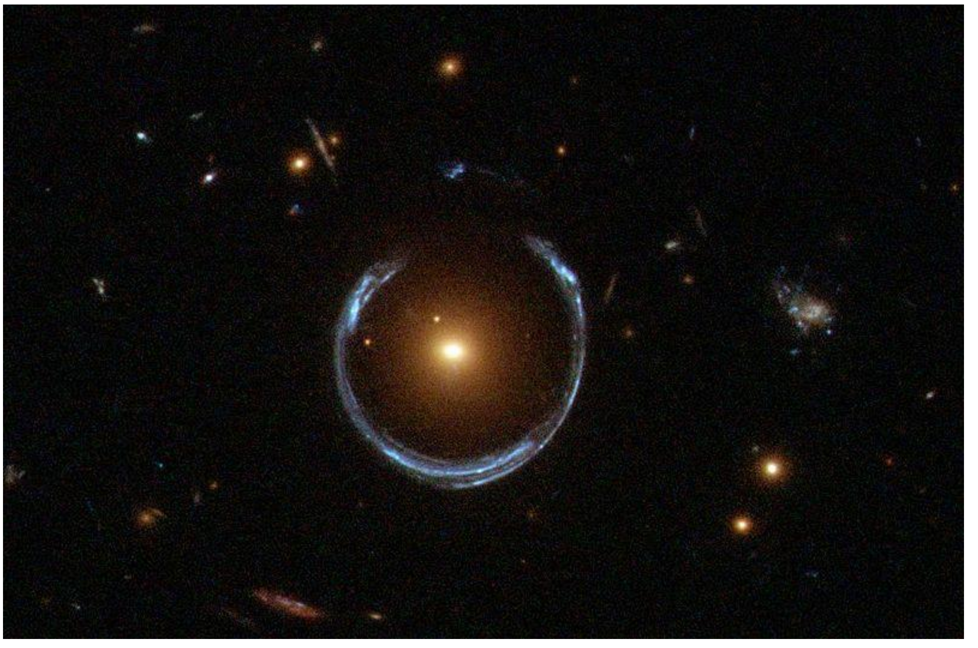

Figure 2 The famous photograph of an Einstein ring around a galaxy that was given the name Horseshoe Einstein Ring [4]) .

For the deflection angle ψ of a light ray passing a mass at a distance R, Einstein [5]) found the formula $\psi = 4\frac{GM}{c^2}\frac{1}{R}$ rad.

With the previously given formula for R_0 , namely $R_0 = 2\frac{GM}{c^2}$, it follows $\psi = 2R_0\frac{1}{R}$ rad.

For the Einstein ring, the angle $\psi << 1$ in general, so $sin\psi = \frac{2R_0}{R_{ring}}$.

Also holds at the distance r from the black hole: $sin\psi = \frac{R_{ring}}{r}$.

Equating yields $\frac{2R_0}{R_{ring}} = \frac{R_{ring}}{r}$.

With this, we find the radius of the Einstein ring: $R_{ring} = \sqrt{2R_0 r}$ meters.
The result was already used in the box on p.3. From that followed:

The solid angle of the black spot $\omega_{spot} = \pi\left(\frac{R_{ring}}{r}\right)^2 = 2\pi\frac{R_0}{r} = 4\pi\frac{GM}{c^2}\frac{1}{r}$ sr.

And the time dilation $TDT = \frac{\omega_{spot}}{4\pi} = \frac{GM}{c^2}\frac{1}{r}$ sec/sec.

From the last formula, we deduce that the solid angle of the black spot is directly proportional to the mass and inversely proportional to the distance r.
It follows that the solid angle of the black spot of a collection of particles or masses can easily be found by taking the sum of the individual black spot values.

For us, this means that from a large collection of masses located at the same distance from the observer, we can simply take the total mass of those masses to determine the obstruction magnitude. We will apply this to determine the black spot of the protons that, with their small masses, are uniformly distributed in a spherical shell at a large distance from an observer.

5 The slowed speed of time in the universe

In **1929**, Edwin Hubble **[6])** published the results of research in which he found the relationship between the distance of a galaxy and the redshift exhibited by the light from that galaxy. The traditional explanation is that the redshift is caused by the speed at which the galaxy is moving away from us. The speed at which this occurs is directly proportional to their distance. Currently, the Hubbleconstante, the constant between speed and distance, is found to have a value of **70** km/sec per Mpc. To clarify: **1** Mpc = **1** Mega-parsec = **3.26** million light-years.

However, with Obstruction Theory, redshift can be explained without assigning a velocity to galaxies, and thus without all that fuss about an expanding universe.

It is illuminating to compare the speed of time in the rarefied universe to visibility in a fog. At a great distance, both the speed of time in the universe and visibility in a fog area decrease to zero.
From the center of the visible area in the fog, transparency decreases as we look over a greater distance. This involves two aspects:
1st, the increasing scattered light that impairs visibility, and
2nd, the reduced direct light reaching the center due to scattering.
Only with direct light can an image be formed so that we can see something and determine where the light comes from. Visibility at a certain distance is determined by the extent to which the light can reach the observer unimpeded from that distance. The light originating from the edge of the area is scattered entirely, so that no direct light reaches the observer in the center anymore. At that location, he sees nothing but fog.
Conversely, if we look from the edge of that area towards the center, the transparency becomes zero precisely in the center. The observer in the center becomes invisible.
If we walk a short distance through the misty landscape, the area we can survey moves with us. That visible area therefore belongs to the observer.

There are striking similarities between the mist in a landscape and the speed of time in a universe with an even distribution of mass particles.
We can compare "visibility" to the "speed of time".
As "visibility" decreases, less direct light reaches the observer, but the amount of light remains the same, albeit in the form of scattered light.
The same applies to the decrease in "speed of time". Direct radiation originating from a great distance exhibits a reduced speed of time, but the speed of time at the observer's location remains the same.
We assume that the speed of time generally has the same value across the entire universe.
The situation changes near a large mass, where we can no longer speak of a tenuous universe. There, the speed of time decreases locally. We can compare this to a large, dark balloon in a misty landscape. Around it, the amount of light will decrease. However, this is a distortion of the global picture.

Definition
The observed speed of time at a certain point at a distance ***r*** from an observer is determined by the relative amount of direct radiation that can reach the observer at the center of his universe from that point.

Due to the presence of mass particles in the universe, the speed of time at such a point decreases with distance. Conversely, viewed from that point, the speed of time of the observer at the center actually decreases.
We can call this the **relativity of position**.

- Compare that with the **relativity of velocity** as described on p.**2**.

According to the literature, the density in the sparse universe has a value of ρ **= 8.24x10^{-27}** kg/m^3, approximately **5** protons per cubic meter. Naturally, this is not a hard reality, but a good estimate based on assumptions and measurements. Despite their small size, we may consider all these mass particles as impediments that slow down the speed of time. How should we deal with this?
If we imagine an observer somewhere in the uniformly filled universe, then direct light—that is, light reaching the observer in a straight line—will reach the observer from a great distance ***r*** to a lesser extent due to obstructions than if the obstructions were absent. All points located within a spherical shell with radius ***r*** around the observer will, of course, contribute to the same extent.
The amount of mass in the spherical shell can be calculated, and thus the obstruction magnitude can also be calculated for the direct light reaching the observer. The calculation follows in the next paragraph.
From this, it follows what observed time velocity we must then assign to the points in the spherical shell.

A second observer located at a different place under the same conditions will likewise consider himself to be at the center of his universe. He will observe the same time velocity for the particles in a spherical shell at a distance ***r***. However, this second universe is shifted relative to the previously mentioned universe by the distance the observers occupy from each other.

Conclusion: Everyone, every point, is the center of its own universe and observes the same reduced time velocity at a distance ***r*** from that center.
It will be clear that the time velocity of these two observers is equal because they are in an identical situation. The consequence is that the time velocity in the uniformly filled universe is the same everywhere. There is no time velocity gradient. Therefore, no acceleration from one observer to the other can take place, even though a lower time velocity is observed at the other. That is an observational effect and does not represent the actual state of the time velocity at that location.
- Understandable, just as observing exclusively fog at a certain distance in a foggy area does not mean that people at that distance can no longer see each other!

The observed time velocity of light from distant galaxies therefore decreases with increasing distance in the uniform universe. This is starting to look like **Hubble**!

6 The redshift and the Hubbleconstante

If we want to investigate time dilation, we must concern ourselves with a single universe of which the observer is the center.
To begin with, we ask ourselves what value the velocity of time takes on at a great distance from the observer due to the uniformly distributed masses in the cosmos. Each spherical shell with a thickness of one meter around the observer contains an amount of mass ***M*** that obstructs the view of the universe. As a result, the time speed of light traveling from outside the spherical shell towards the center will be delayed. This is observed in the radiation arriving at the center. Each additional ***spherical shell*** will increase the delay (Fig.3).

According to the observer, however, the time speed in the center of the spherical shell has not decreased because there is no actual difference in velocity of time between the center and the surroundings. The observed light, however, has an increasingly lower frequency (is red shifted) as it originates from a greater distance.

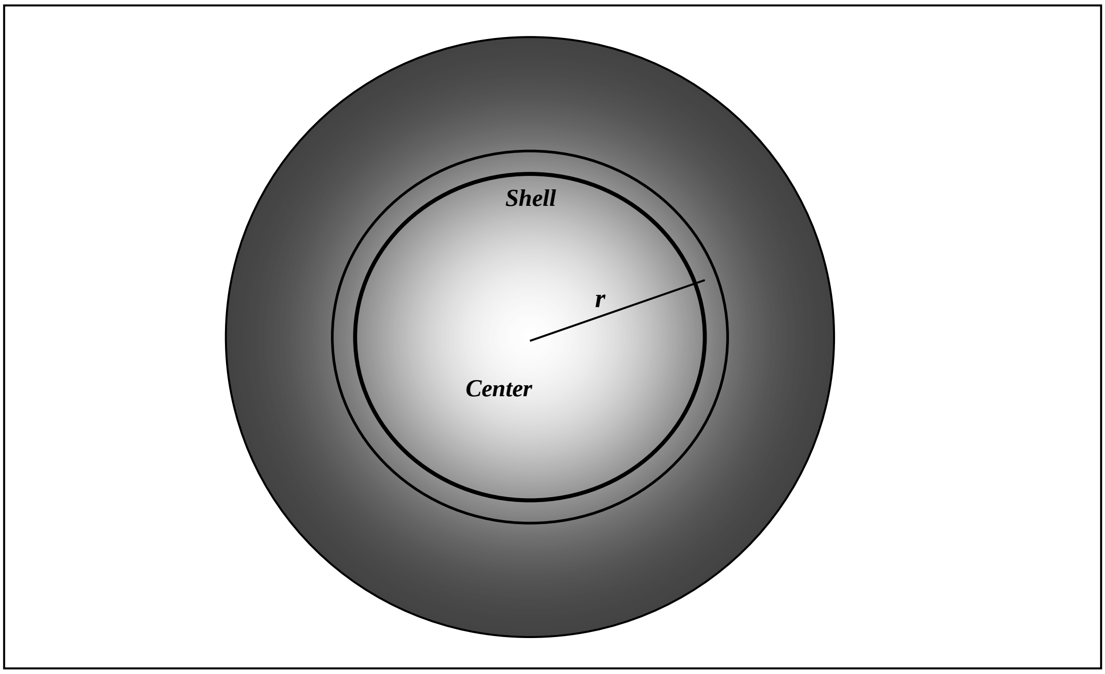

Figure 3. The further we look from the center, the slower time seems to pass.

We can calculate the time dilation caused by the spherical shell.
To do this, we use (see formulas p.3) the formula used to calculate the solid angle **ω** of the black spot corresponding to a mass ***M***, namely $\boldsymbol{\omega = 4\pi \frac{GM}{c^2}\frac{1}{r}}$ sr.

The mass ***M*** per spherical shell of **1** m thickness and an area of $\boldsymbol{4\pi r^2}$ m^2 is $\boldsymbol{M = 4\pi r^2 \rho}$ is kg.
The solid angle of the black spot corresponding to the mass of the spherical shell is therefore

$$\boldsymbol{\omega = 4\pi \frac{GM}{c^2}\frac{1}{r} = (4\pi)^2 \frac{G\rho}{c^2} r} \text{ sr.}$$

The solid angle therefore increases proportionally with the radius ***r*** of the sphere.
From this follows a time dilation due to the obstructing effect of the spherical shell at this distance of magnitude of $\boldsymbol{TDT = \frac{(4\pi)^2}{4\pi}\frac{G\rho}{c^2} r = 4\pi \frac{G\rho}{c^2} r}$ sec/sec.

The contribution to the time dilation is therefore proportional to ***r***. From this it follows that the redshift of galaxies must increase with the distance of those galaxies.

As we mentioned already **Hubble** also found a proportionality with r. However, the measurements he studied provide a result of the contributions of all spherical shells to the redshift over the entire distance ***r***, not per spherical shell.

He converted the time dilation associated with redshift over the entire distance into the speed the system should then have according to the time dilation that follows from Einstein's special theory of relativity, and he found a constant of proportionality, the Hubbleconstante, of **500** km/sec per Mpc. That value later turned out to be much too large due to errors in the distance measurements. The current value of the Hubbleconstante is approximately **70** km/sec per Mpc.

We can redo that calculation using Obstruction Theory. Then we must integrate the contributions per spherical shell that we found in the last formula from **0** to ***r***! In doing so, we find a time dilation of $\boldsymbol{TDT = \int_0^r 4\pi \frac{G\rho}{c^2} r\, dr = 2\pi \frac{G\rho}{c^2} r^2}$ sec/sec.

With this formula, we can calculate the Hubbleconstante. This time dilation must be equal to the time dilation of $\boldsymbol{\gamma = \frac{1}{\sqrt{1-v^2/c^2}} \approx \frac{1}{2}\frac{v^2}{c^2}}$ sec/sec corresponding to the velocity $\boldsymbol{v}$ that we must assign to the galaxy according to traditional theory—entirely in accordance with Einstein's special theory of relativity.

So $\boldsymbol{\frac{1}{2}\frac{v^2}{c^2} = 2\pi \frac{G\rho}{c^2} r^2}$

From the formula, we can already see that the (hypothetical) speed is indeed proportional to ***r***.

With the values $\boldsymbol{G = 6.67 \text{x} 10^{-11}}$ $m^3/kg.s^2$ and $\boldsymbol{\rho = 8.24 \text{x} 10^{-27}}$ kg/m^3, we find
$\boldsymbol{v = r\sqrt{4\pi G\rho}}$ = ***r*** **x 2.63x10^{-18}** m/sec.

Now we can find the Hubbleconstante using this. We have to calculate the relative velocity of two galaxies separated by **1** Mpc (=**3.26** million light years). We then find:
v **= 3.26x10^6 x3600x24x365x3x10^8 x 2.63x10^{-18} = 8.11x10^4** m/sec.
This is the Hubbleconstante according to Obstruction Theory: **81.1** km/sec.
That differs slightly from the **70** km/sec we mentioned earlier.

But ***that speed does not exist***, because it results from the incorrect interpretation of redshift, which states that it must be a consequence of the speed of the galaxies.

With Obstruction Theory, redshift is explained by the mass present in the universe. By not linking redshift to speed, we gain a whole ***new worldview*** in which the ***expansion*** of the universe plays no role, any more than the ***Big Bang***.
This turns the theory of the expanding universe shaken up!

This would be a 'giant leap' forward for science.

7 Size of the visible universe

In the previous paragraph, we calculated the time dilation that the radiation undergoes when it reaches the center of the sphere from a distance r being $\boldsymbol{TDT = 2\pi \frac{G\rho}{c^2} r^2}$ sec/sec.

We agree that the boundary of the universe must be drawn at the location $\mathbf{r_{universe}}$ where the time dilation of the light observed by us is equal to **1** sec/sec. The wavelength then becomes infinitely large and the frequency of that light is zero.
We calculate that location.
By substituting the values of $\boldsymbol{G = 6.67 \text{x} 10^{-11}}$ $m^3/kg.s^2$ and the density $\boldsymbol{\rho = 8.24 \text{x} 10^{-27}}$ kg/m^3 of the universe into the formula, we find:
$\mathbf{r_{universe} = 1.614 \text{x} 10^{26}}$ meters.

Converted from this, it follows that the radius of the ***visible universe*** is **17.1 billion** light years. This is of the same order of magnitude, but significantly more than the generally accepted value of **13.8 billion** light years.

We are not worried about that yet, because our value still needs to be corrected. We are thinking here of the telescopic effect of gravitational lensing. That will be discussed in the next part of this series of articles inViXra, which deals with ***Dark Matter***.

8 Conclusion

Obstruction theory offers a deeper insight into time dilation in the vicinity of a compact mass. We move away from the traditional idea of an active force interaction between masses. We consider the acceleration of an object relative to the mass as a natural motion arising from the constraint of free space by the mass. This constraint leads to a time velocity gradient around the mass, from which the acceleration follows.

On philosophical grounds, we posit that a freely moving object must accelerate towards a mass to keep the velocity of time over the object constant.

This interpretation of gravity offers starting points for solving the issues that cosmology still grapples with. In particular, the explanation of the redshift of distant galaxies by means of their velocity—from which a complex edifice of theories regarding the expansion of the universe and even a Big Bang emerged—can be overhauled, because the redshift can be easily explained by the average mass density of the universe.

The preliminary results for the Hubbleconstante and the radius of the visible universe show that Obstruction Theory yields comparable results to the Newton/Einstein theories, so our theory must be considered a serious alternative.

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[1] Henk Dorrestijn; Shaking up Einsteins theory; Relativity and Cosmology; Pioneer; Vixra 2603.0028

[2] Henk Dorrestijn; Shaking up Newtons theory; Astrophysics; Oumuamua; Vixra 2603.088

[3] Henk Dorrestijn; Time and Cosmos §15 ; U2pi, The Hague 2023

[4] Hubble telescoop 2011; Object LRG 3–757

[5] Einstein 1916; "Die Grundlage der Allegemeinen Relativitätstheorie" , Annalen der Physik 49, §22

[6] Edwin Hubble 1929, "A relation between distance and radial velocity among extra–galactic nebulae"; PNAS 15, p.167