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Seasonal Dilation Hypothesis

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Abstract: ***Seasonal dilation hypothesis examines earth's motion in the dimension of time, considering it moves throughout time and space, and that sometimes it slows down its motion in the fourth dimension as a result of variations in curves of space time fabric. It marks the difference between a clock and time. Furthermore, it suggests that time does not move as we observe from clocks, rather clocks sometimes run faster than time, and vice versa. Additionally, it implies that the space-time fabric in our universe is undergoing a continuous change, since all objects in this free space are continuously moving.***

Keywords: Hypothesis, Seasonal dilation, Space-time fabric, Time dilation, gravitational dilation, space-time, Equivalence of gravitational and inertial masses, Invariance of speed of light, Clocks, motion of earth

1. Origin

While reading this you may be seated, but you can move left or right, front or back, upwards and then downwards. You are aware of your motion in three known dimensions: x, y, z. However, you are consciously unaware that you are also moving through time-*the fourth dimension*. You cannot stop yourself from moving forward in time.

The hypothesis is evolved from Einstein's theory of relativity and one of its applications: *time dilation (slowing down ourselves through the time).*

There are two ways to dilate time,

- Speeding up a lot
- Going close to an object with huge celestial mass, i.e., gravity

The same concept enables us to understand that each object in this universe is embedded in a space-time fabric by making a space-time curve upon itself. Space-time fabric is an immaterial and insubstantial thing that we refer as a fabric here to make it easier to understand. It can be compared to the situation where you stretch an elastic fabric and put a heavy ball in the centre, the ball sinks deeper into the fabric, creating depth all around. Massive the celestial object greater is the depth created.

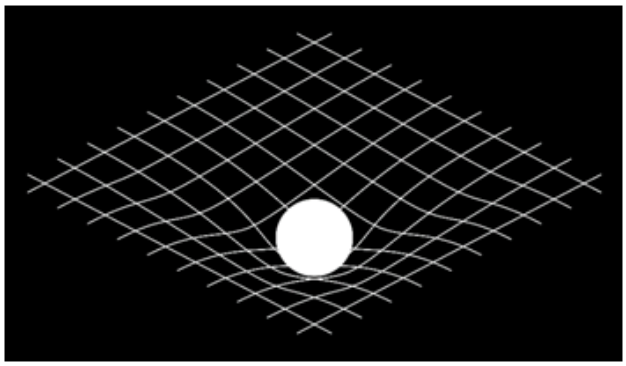
In the second case, these depths cause time to dilate.

The following discussions describe how the earth's motion in the dimension of time changes when it experiences changes in the curves of the space-time fabric when it moves in space.

2. Theory

Occasionally in life, an hour according to a clock appears too large, and sometimes it seems to pass as quickly as a minute. What causes this? Does our mind play a part in it, or is it a physical phenomenon?

Time is not what we see in a clock. It is the clocks themselves that measure the dimension of time, they are machines that move at a constant speed. Butwe cannot say that time moves at a constant speed. On the earth and outside the earth, it actually varies.



Taking into consideration the two axioms of Einstein's theory of relativity, invariance of speed of light and equivalence of gravitational and inertial masses. We can assume that the space-time fabric across the solar system is not flat, but it is uneven like a large desert. This is due to the sun and other celestial bodies all around. This fabric is full of depth and upliftment all across the universe because of different masses. It is also possible that the solar system itself rests on a depth or uplift of space-time fabric created by another heavenly object such as a large star or a black hole. This uneven distribution is not constant since no object in this universe is stationary, whether it be our solar system or the Milky Way galaxy. The space-time fabric is therefore not stationary and can be compared to that of water waves in a river.

The orbit of our earth passes through the similar crests and troughs of this space-time fabric.

As observed through the gravitational dilation theory, as we pass through a depth in the space-time fabric created by a massive object, the distance to be covered increases. Which is balanced by slowing down of motion in the dimension of time. In such situations, time becomes slower. Likewise, the converse of this situation is also true, in such a situation, time moves quickly.

If earth passes through a trough, then, as in the first situation, time moves slower, but clocks move at the same speed. We feel as if an hour according to clock is passing as if it is a second.

When the earth passes through a crest, then, as in the second situation, time moves faster, but clocks continue to run at the same speed. We feel as if an hour is passing according to the clock, as if it is a long day.
Such phenomenon is called **seasonal dilation**.

3. Mathematical Analysis

In order to check whether earth is on a crest or trough, we have to use the magnitude of net gravitational force on earth at a particular point. We can write,the change in earth's velocity in the dimension of time is directly proportional to negative of the change in net gravitational force on earth.

$\Delta V_t \propto -\Delta|G_n|$
$\therefore \Delta V_t = -K_0 \Delta|G_n|$ (where K_0 is constant of seasonal dilation)

Negative sign here signifies that when we put the value of $\Delta|G_n|$ along with the sign, if we get the value of ΔV_t to be positive, then earth's velocity in the dimension of time increases and vice versa.

As we know, in the dimension of time, we travel at the speed of light(C). Our initial speed was Cm/s

Case 1

Suppose $\Delta V_t$to be positive.New velocity is $(C+\Delta V_t)$ m/s

Earlier in 1second (according to clock) we travelled C meters

(Here 1s of clock is equivalent to 1s original time)

Now in 1 second, we are traveling $(C+\Delta V_t)$ meters

Here the distance travelled in dimension of time is more, hence original time must be more, say, (1+x) seconds where x is dilated time.

∴ in original time earth is travelling $(C+\Delta V_t)$ meters at speed of Cm/s in time (1+x) seconds.

Substituting values in equation *time*= $\frac{distance}{speed}$.

We get, x = $\frac{\Delta Vt}{C}$seconds (clock is moving x seconds slower than original time)

Case 2

Suppose $\Delta V_t$to be negative.New velocity is $(C-\Delta V_t)$ m/s

Earlier in 1second (according to clock) we travelled C meters (Here 1s of clock is equivalent to 1s original time)

Now in 1 second, we are traveling $(C-\Delta V_t)$ meters.

Here the distance travelled in dimension of time is less, hence original time must be less, say, (1-x) seconds where x is dilated time.

∴ in original time earth is travelling $(C-\Delta V_t)$ meters at speed of Cm/s in time (1-x) seconds.

Substituting values in equation *time*= $\frac{distance}{speed}$.

We again get, x = $\frac{\Delta Vt}{C}$ seconds (clock is moving x seconds ahead than original time)
Hence to avoid any confusion substituting the value of ΔV_t without sign,

$$X = \frac{K0\ \Delta|Gn|}{C} \text{seconds}$$

When we put the value of $\Delta|G_n|$ with sign,
If we get x to be positive then earth is x seconds ahead of original time.
If we get x to be negative then earth is x seconds slower than original time.

4. Conclusions

- In the fourth dimension, or time, we do not move constantly. Rather, we sometimes slow down and sometimes speed up.
- This difference requires a precise calculation, but then also the inaccuracy will persist since nothing in this universe is stationary. Continuously, space-time fabric experiences change in crests and troughs.
- Seasonal dilation can be as small as quarks or as large as '∞'. The second is only possible if Earth undergoes a drastic change in curves of space-time fabric.

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