https://www.youtube.com/watch?v=UKxQTvqcpSg&t=71s

Does Time Cause Gravity?

Způsobuje čas gravitaci ?

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1 033 821 zhlédnutí
•24. 2. 2021

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There is a lot of talk about time on the website, eg most recently http://www.hypothesis-of-universe.com/docs/aa/aa_143.pdf Check out the Space Time Merch Store https://pbsspacetime.com Sign up for the mailing list to get episode notifications and hear special announcements! https://mailchi.mp/1a6eb8f2717d/space...

You are currently hurtling through time at the speed of light. But be careful. If even a tiny bit of your breakneck temporal velocity leaks into one of the dimensions of space. And you're standing in the wrong place at the time, you will rapidly accelerate to your doom. You think I'm kidding? I just described the true source of gravity. Don't look down. Clocks run slow in gravitational fields. * First mistake: On the satellite, the clock-mechanism does not run other than on the Earth's surface, but time !! !. Time runs on a satellite in a different gravitational level differently !!! Our GPS satellites tick *satellites are not ticking, but time is ticking = it

flows at a different pace on the satellite !!! than on the ground faster by a factor of 1-in-a-billion 10^{-9} - enough to thrown their position accuracy off by 11km per day. * The relative motion of the satellite and the Earth's surface is monitored with an "human sensitivity" of 8 orders of magnitude in a different sensitive resolution, "tempo", ie v < c…; $10^8/10^0$ = v < c = 1/1. We humans on Earth have chosen "units" of length and time according to our "natural perception of the environment, and this ratio is then based on" expanded space-time "c = 1/1 with an eight-order non-ratio. If we humans were to move through the universe at a speed of c = 1/1, then we would not perceive either the "expansion of space" (better to say unpacking) or the aging of the Universe. But our "position" in the Universe is "in a stop-state, ie in a global" stop-position "and a global" stop-time = age "in other curves of these quantities, these 3 + 3D dimensions. In our recent episode, we saw why this gravitational time dilation is inevitable - it follows as surely as 1+1=2 if we accept the two axioms of Einstein's relativity theory: that the speed of light is constant * A better explanation than "constant" is in understanding the "curvature" of the dimensions → in flat space-time (such as the one before Bang where there is no matter) must be c = 1/1 ($c^3 = 1^3/1^3$) because there is no matter in it, there is no matter in it. nor gravity, for gravity is the "curvature of space-time"… right ?! for all observers, and that the weight induced by acceleration is fundamentally the same as that induced by gravity - the so-called equivalence principle.* O.K. - - And I'll add astonishment →
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But none of this is very satisfying. We know that gravity must cause clocks to run slow on the basis of logical consistency.* I repeat. No. The **watch** is not running, **time** is running… the watch only measures the number of ticks in the selected time interval… And we know that gravity DOES cause clocks to run slow based on many brilliant experiments. But I never explained WHY or HOW gravity causes the flow of time to slow down.* So… I have one ear for that explanation … And I'm not going to explain it now - because in a sense it's not true. Oh yeah… and I'm having "fun"…Gravity does NOT warp the at the rate **flow** of time. It's the other way around - the ~~**warping**~~ twisting of time causes gravity. (!)Well, well…; and twisting time is from another point of view "changing the pace of time" and ... and change the tempo "for Mr.Observer" (selected anywhere in space-time in trace-state, stop-position and stop-age) means that the Observer senses, yes scans, into their observation of a **different** pace of time **a)** from a rocket = yeast - any body, etc. or **b)** from the levels of gravitational potentials ..., repeat: The Observer senses it at its observatory and evaluates him as **different**, although on a rocket or quasar dilated pace not, we just observe this, see str ... because the system of rocket or quasar is rubbing each other. That's what I'm going to show you right now. I'm one ear ... If you didn't watch the previous episode - do it, though it's also ok if you watch this one first. Just don't forget. So how is it that time causes gravity?* Better circled

question should sound: How to curvature of time dimension causes gravity? I'll say that in my "layiness" as follows: if I have v < c, ($v^2 < c^2$); ($v^3 < c^3$), then in the grid 3 + 3D spinning systems. Status (acceleration) $a = x / t^2$; $a' = x / t_1 . t_2$,, So if acceleration = x / t_1. t_2, then i already show it "curdle" time dimension, and this manifestation-use is already" gravity ". I am convinced that only 2% of the physicists of thought knows how my speech would rework into "better rendering". Everybody knows that when three length dimensions x, y, I must not confuse them in the equation; E.g. I cannot confuse $\mathbf{x^2 = y}$ one "x" in the equation "y" !!!, then gives another sense, another equation. The same applies to time dimensions: t_1 ; t_2 ; t_3 are different dimensions and cannot be "identified". Mathematicians will assume with it. Let's start with … a teapot. I lA nice china teapot hanging in space, minding its own business. Absent a gravitational field or any forces, if the teapot starts motionless it stays that way. At least, it stays motionless* ... from the point of view of the chosen Observer and the chosen system fitted to rest, the teapot will be in inertial motion **m.v** (when the curvature of time changes from the curvature of length, this results in STR and manifestations-examples of time dilatations) with respect to the three dimensions of space. * I'm not sure if: if the teapot "hangs" between galaxies in "empty space", that we can't realize = we don't know the movement "along the longitudinal dimension" in the surrounding space, but that we know, know and understand it unmistakably, that time flows, that time passes around the kettle, ehm-ehm, and that we even "know" how fast…?!?!? Everything is moving through the dimension of time. We can show this with our old friend the spacetime diagram.* Let's have just two dimensions of space and so we have space … for time. We show progression through time as the object moves up. You could say that it has a positive velocity through time, zero speed-shift per dimension in space. OK, now let's add a second object - something nice and massive … the planet Earth will do. We know that the presence of mass and energy warp spacetime - and the most intense part of that warping is in time - our gravitational time dilation. * The author could give the description better here…Things closer to the Earth move through time more slowly. * O.K. The pace of time is slower at sea level than on a satellite. It's just hard "how" to compare. The time delay of the signal from point A to point B "destroys" us and compares the flow rates… We can show this as a bunch of identical clocks. They tick as they move up. Clocks closer to the Earth take longer * The "interval" on the watch "on the ground" and on the "satellite" will be the same at the same pace of time, but a different interval will be at a different pace of time that .. to tick for every tick on a distant clock. Velocity *speed (of what?) increases in time through time increases away from the Earth. If we move particles through time according to those velocities, we have this sense of time flowing in a gradient - faster streams distant from the Earth, slower streams near it. Kind of like how water in the center of a stream flows more quickly than the edge, where the shallower stream drags on that flow. It's almost like Earth's mass creates a drag on the flow of time around it.* Sure: "like" ...; Truer is that it is the rotation of the observation system and the emitter of signal, when the same interval on the rotator of the same interval on the shaped shade of another ... So what happens to an object sitting in this stream of time - parts further away from the Earth age faster, right? Well, yes, but that's not all. We can think of any object as being made of many tiny clocks. Each atom, each subatomic particle trying to tick at its own rate with its own pace of flow. The "speed" word is not suitable for the time flow. The speed is always the "length" to "time" ratio. And each of those clocks has a velocity vector in time. So what's the temporal velocity ? of the entire object? In Einstein's relativity you have to remember that time and space are not independent of each other.

Objects don't just have a velocity through space or through time - they have a velocity through spacetime. O.K.We call this their 4-velocity. To get at this, let's move away from our teapot for a second and talk about boats. Imagine two boats on an actual stream. One near the edge moves slow and one near the center moves fast. The slow boater reaches out an oar

which the fast boater grabs. What happens? Instinct tells us that the fast boat is pulled tow ards the shore. We can think of the two objects as becoming one object, and the difference in velocities across its length causes a torque that rotates the overall velocity vector towards the shore." It's the same with the 4-velocity of an object in a gravitational field. The gradient of velocities cause the overall 4-velocity of the object to be rotated.* Well, such an interpretation would master Canada and New Zealand Maruška from 6A primary school .. just nothing-power. All individual 4-velocities start out being purely in time, but the sum is rotated partially into space. And it's always rotated in the direction of decreasing flow - which in a gravitational field is downwards. So this is the motion of any object in a gravitational field - it gradually picks up velocity in the down direction - it accelerates - and it pays for that acceleration by losing velocity - Decelerating in the time direction. There's a certain way of interpreting the math of relativity that says that everything travels at the speed of light.* just nothing-power. Light travels at the speed of light through space - obviously enough - and we know that nothing with mass can reach that speed traveling through space. just nothing-power. But if we interpret time as a dimension like space, then a stationary mass really is moving at the fastest possible speed in the temporal direction. ?? This is something we can come back to another time - for now let's go with it. The 4-velocity of a massive object is pointed almost entirely ?? in the time direction. ?? On the other hand, light itself travels at the speed of light through space only, ?? and not at all through time - a photon's clock is frozen.* O.K. On the photon time, the time is not running, or the pace of the tas is zero, but the age of this photon is a stop-state in which it was formed. c = 1/1; The question is whether the borion of 3 + 3 dimensions around the photon is zero, in which the grid is (?) why it changes its movement "after dimension of spatial and not after dimension of time? ; (I don't know ... I don't have thought out) You might imagine it's 4-velocity is entirely rotated out of the time direction into space - although technically photons and other massless particles don't have a 4-velocity, which is defined according to the ticking of your own clock - your proper time - which is zero for the timeless photon. (*-*) In this picture, a falling object trades some of its enormous velocity through time to pay for a small velocity through space. To us currency exchange looks favorable for space - a teapot gains a rapid plummet to its doom for an imperceptible slowing of its clock. We see the same favorable exchange when we try to convert mass into energy via Einstein's most famous equation, E=mc^2 - the speed of light is the exchange rate, and the speed of light is very large. By the way, two of my favorite physics channels have great, slightly different explanations of this effect. Check out Nick Lucid on Science Asylum and Eugene Khutoryansky's channel to get their takes. So is that it? Do we now perfectly understand the source of gravity? Well speak for yourself - I'm still confused. * In the Czech Basin, everyone is persecuted, ie disparagingly labeled as an unrecognized genius, masquerade and slender, if he has other views than physical establishment - ie Kulhánek and his group This raises thorny questions. Like - what about a particle with no size - supposedly point-like particles like electrons, quarks, etc. Well, actually, nothing truly occupies only a single, perfectly defined position in space

- quantum uncertainty * Heisenberg →

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- means that everything is always at multiple places at once, and

so experiences the gradient of time flow.

But actually general relativity doesn't need quantum mechanics to explain gravity. *

O.K. QM is linear and OTR is nonlinear. One by one passes with the help of "straightening the curvatures" of dimensions, so D. Zoul says quantum foam - http://www.hypothesis-of-universe.com/docs/g/g_074.pdf I call it "dense chaos" and call it "Hot dump principle" - http://www.hypothesis-of-universe.com/docs/g/g_073.pdf ; http://www.hypothesis-of-universe.com/docs/h/h_082.jpg and therefore the photon "runs" between the electron and the positron here and there. ((*nothing is equal in the universe, the equation is just an abstraction of mathematicians on paper*)) It's enough to imagine clocks that are infinitesimally separated and we still have our time gradient. * At this point, the author moves in a different level of thought "about time" than I do, so I apologize The other thorny question is about light itself. If photons are already fully rotated into the spatial direction, how is it that they're also affected by gravitational fields? They have no "velocity through time" to trade. * That is, they have the same rate of time flow as the Universe itself has at that point in its expansion of the curvatures of dimensions, both longitudinal and temporal…, other material bodies have a higher curvature of time dimensions than "all-space time" But light DOES bend in a gravitational field * yes, the photon "copies" the curvature of longitudinal dimensions in curved gravity = gravitational field and yet it flies through the cell; I can't explain yet - astronomers see it happening all the time in the effect we call gravitational lensing. * Here it could be logical proof that the "gravitational curvature" small today was once so large that the environment was "foam" eg vacuum foam = plasma, ie linear foam "unwrapped" into little crooked gravity… In fact, the imaginary paths of light rays were one the most important tools that helped Einstein develop both special and general relativity. So we'd better understand the effect of gravity on the path of light. To do so we're going to need to shift our perspective in a couple of mind-bendy ways to see how the flow of time determines the path of even timeless particles. * The author's reasoning touches on my thoughts, when I create a vision of the non-constant pace of the passage of time from Bang to the present day, ie the "unpacking" of curvatures and temporal dimensions. And with those new perspectives we'll get a new insight into the source of gravity * the word "source" is wrong .., gravity has occurred, it has been set, ie it has no source. ; Gravity as a "certain kind-state of curvatures" was recruited by "setting" the curvatures of three dimensions, one longitudinal and two temporal, similar to an ellipse becoming a parabola (and a hyperbola parabola) (I used to work for 20 years on the fact that gravity has the equation of a parabola … Ehm) that seems weirdly at odds with everything.* this is not a *contradiction*, it is only a transition of linearity to nonlinearity. I just told you - and yet is simultaneously exactly as correct. But first you're going to need to some time to think on everything I've just told you and let it settle, * yes, I've been thinking about it for 40 years and we're going to need some time to make that new episode of space time.* Yes, the new episode is the understanding of 3 + 3 space-time, and above all that Matter is made of it… Last time we talked about the gravitational wave background - the ambient buzz of gravitational waves from the distant and ancient universe. Which, by the way, we may have detected using a pulsar timing array. Ivan Kilmoc asks where he can find the audio files of the pulsars that we played in the episode. Sorry, I should have linked those in the description. I'll link them in the description for this video. They're from a number of different radio telescopes, but were collated by the Parkes Observatory in Australia. Stu Lora asks if I can elaborate on my comment "the time before the big bang" - which I mentioned in reference to a potential component of the gravitational wave background. I was referring to the extremely energetic events during the inflationary epoch - fluctuations in the so-called inflaton field, or in the final decay of those inflatons at the end of inflation. I call this "before the big bang" because many physicists are moving away from the picture where you have the big bang, then you have an instant of inflation, then regular expansion. * Inflation as a "sharp, sudden expansion" of dimensional curvatures; that is, **the tempo** of unpacking, could have taken place for 3 the dimensions of time (timeon) differently than on the side of the dimensions of 3

longitudinal spatial (spaceon) For example, in the eternal inflation model, inflation may have lasted for a very very long time and still be continuing almost everywhere - but it ceased in isolated bubbles - corresponding to the formation of a new universe.* Ah, the author follows the ideas of "many universes" It makes more sense to talk about the end of inflation as the beginning of such a universe, rather than the beginning of global inflation. * I have a different vision than the "multiverse" (see *) So in that case the last instant of inflation IS the instant of the big bang, and gravitational Kinkusnacht asks whether gravitational waves can be used to test ideas in quantum gravity. The answer is absolutely. The most well known prospect is by detecting the signatures of primordial gravitational waves - waves from the inflationary epoch. These could be found in the gravitational wave background, but also indirectly through their effect on the cosmic microwave background. Interaction of those waves * (ie waves of curvatures of time dimensions) with matter right after inflation may have caused characteristic patterns in the distribution of matter, ??!which we might now see in the way the CMB light is polarized. The BICEP2 experiment claimed detection of these so-called “b-modes” but it turns out they were wrong. But the b-modes may be there, and we’re digging deeper to find them. During inflation it’s believed that quantum gravitational effects would have been very important, so if we can get any type of signal from then perhaps we can learn something. No Mercy8008 says that the way I described the boats rocking on the ocean suggests that I would be an awesome dungeon master. Hm. I'd say I'm at best an ok dungeon master. I think I just rolled a nat 20 on my skill check to describe boats rocking on the ocean. Or did you fumble your saving through versus being impressed by someone describing boats rocking on the ocean? Anyway, thanks for the compliment and for reminding me how much I miss the game. ..compliment ?, I do not know "what it is" for 40 years, for me it is not, does not exist and never will be.
13.06.2021 ; JN 09.07.2021 + 02.09.2021