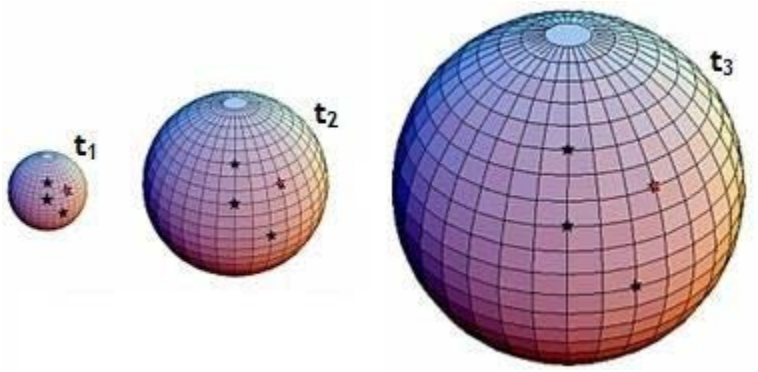
Über Die Gravitationsfeldrelativitätstheorie: A Thought Experiment

Read pp. 10-13 in wegtransformierbar.pdf. The theory is falsifiable (p. 4 therein).

Prerequisite: Richard W. Pogge

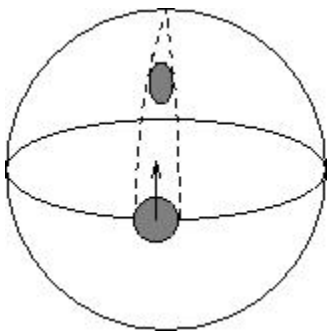
I will talk about the alteration of the *rate* of Heraclitean *flow* of 4D events (p. 8), shown with the increasing **radius** of the 'inflating balloon':



It can never stop. There is no temporal reference frame in which the physical time $\mathbf{t_n}$ could be 'at rest', as opposed to the fact that we can always choose some spatial reference frame 'at rest', and show the physical (coordinate) time $\mathbf{t_n}$ as 'change ***in*** space' (p. 5). Is it possible to recast General Relativity (GR) without any "curvature" ? This is the prime objective of the Gravitational Theory of Relativity (GTR). In German, *Die Gravitationsfeldrelativitätstheorie*.

For example, the popular idea below is **false**. Quote from: John Baez and Emory Bunn, *The Meaning of Einstein's Equation*, January 4, 2006, Sec. Spatial Curvature.

"On a positively curved surface such as a sphere, initially parallel lines converge towards one another. The same thing happens in the three-dimensional space of the Einstein static universe. In fact, the geometry of space in this model is that of a 3-sphere. This picture illustrates what happens:



"One dimension is suppressed in this picture, so the two-dimensional spherical surface shown represents the three-dimensional universe. The small shaded circle on the surface represents our tiny sphere of test particles, which starts at the equator and moves north. The sides of the sphere approach each other along the dashed geodesics, so the sphere ***shrinks*** (emphasis mine – D.C.) in the transverse direction, although its diameter in the direction of motion does not change."

There is another idea in GR textbooks, which is also **false**: the "pulsation" of the shaded circle in the drawing above, due to some fictitious "gravitational waves" (GWs). Read *The Persistent Mystery of Gravitational Radiation* on p. **13** in Zenon.

I will offer a simple thought experiment to illustrate how to avoid the **false** idea of spacetime "curvature".

Consider three temporal intervals with durations 20*****, 40*****, and 80*****, depicted below with lines built by "frames" denoted with (*****), like in a movie reel (p. 21 in BCCP). Call them '**a**ttractive', '**n**eutral', and '**r**epulsive', and denote as $\mathbf{V_a}$, $\mathbf{V_n}$, and $\mathbf{V_r}$.

$\mathbf{V_a}$: **********************
$\mathbf{V_n}$: **
$\mathbf{V_r}$: ***

Think of the three temporal intervals above as movie clips recorded with *variable* rates (frames ***** per second, FPS), and set $\mathbf{V_a}$ = 20 FPS, $\mathbf{V_n}$ = 40 FPS, and $\mathbf{V_r}$ = 80 FPS. Relative to $\mathbf{V_a}$ (20 FPS), $\mathbf{V_n}$ (40 FPS) will run twice faster; relative to $\mathbf{V_n}$ (40 FPS), $\mathbf{V_r}$ (80 FPS) will also run twice faster. In all cases, the intervals with *variable* FPS will pass **1s** Heraclitean time as 'change **of** space' (p. 5) along **W** (p. 8). This is how *variable rates* (FPS) can assemble *different* intervals for *the same invariant* **1s** Heraclitean time by ***inflating*** the *physical* frames (*****) on the 3D surface of the balloon above.

Notice that in all three cases their (proper) duration and *rate* of time stay invariant: **1s** with rate **1s/s**. This is their 'common denominator'. There is no universal "true" duration nor universal "true" length in GTR (*Gravitationsfeldrelativitätstheorie*): all ***clocks*** and ***rods*** are *flexible* and *relational*. We postulate alteration of the *rate* of Heraclitean Time (p. 8), leading to alteration of the physical (coordinate) time $\mathbf{t_n}$ built by temporal units (*****). The latter can ***inflate*** and ***deflate*** – but only relationally. Read my note at p. **3** here.

The 'neutral' $\mathbf{V_n}$ corresponds to *weightless* objects with **zero** g-force: recall the astronauts on the International Space Station (ISS). Their clocks run *faster* ($\mathbf{V_n > V_a}$) relative to the clocks on the surface of Earth (the latter are lagging 0.007 seconds behind for every six months), and we had to adjust the clocks to have GPS navigation (R.W. Pogge).

It's all relative, as uncle Albert used to say. Today, 14 March 2020, I commemorate his 141st birthday by introducing the equation of *Gravitationsfeldrelativitätstheorie*

RS = **1**.

R (from **r**ate) denotes the rate of the Heraclitean 'time flow' **W** (p. 8), and **S** (from **s**ize) denotes the ***relative*** size of the squared invariant spacetime intervals (Δ **s**^{2}).

For example, consider two cases.

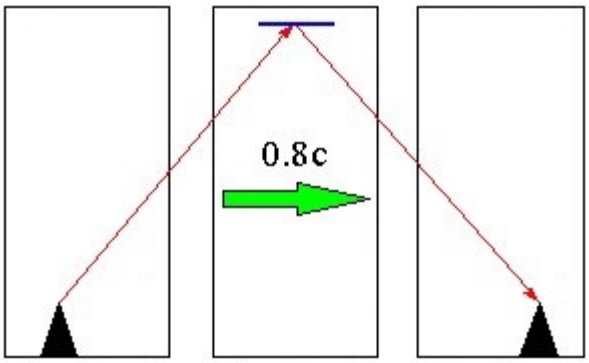
Case **A**: **R** = $\mathbf{V_a}$ (20 FPS), then **S** = 20 and **RS** = **1**, namely, the invariant 1 **RS** second ("deflated" Δ **s**^{2}).

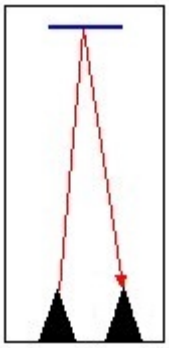
Case **B**: **R** = $\mathbf{V_r}$ (80 FPS), **S** = 80 and **RS** = **1**, that is, again the invariant 1 **RS** second ("inflated" Δ **s**^{2}).

Case **A** is "deflated" relative to Case **B**; and Case **B** is "inflated" relative to Case **A**.

In one sentence: whether *inflated* or *deflated*, the temporal 'tick' (*****) is the same.

To find out which one is inflated or deflated, you must be some unphysical "meta" observer, which has bird's eye view simultaneously on Case **A** and on Case **B**, like you see the two drawings below.





The alternative to GTR (*Gravitationsfeldrelativitätstheorie*) is the established GR, which begins with a "massive body" (Wikipedia) that *somehow*, and for some unknown reason, would create particular "influence" (Sic!) in 4D spacetime. (And then "the Christoffel symbols play the role of the gravitational force field and the metric tensor plays the role of the gravitational potential", etc.)

But hold on: what kind of "influence" is that? It doesn't look like electromagnetism. All we know for sure is that gravity can alter the *rate* of time, as demonstrated, e.g., in the case of GPS navigation and time dilation. But what is '*rate* of time'? One second per second? One meter per meter? And with respect to *what*?

We need to start from first principles. Read pp. 10-13 in the main paper *Über Die Gravitationsfeldrelativitätstheorie* or in viXra:2001.0601vC, 2020-02-22.

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