Can Penguins Drink Warm Water?

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Abstract

A gentle reminder of the origin of gravity, with illustrations.

Let me begin by quoting from W.G. Unruh, Time, Gravity, and Quantum Mechanics, arXiv:gr-qc/9312027v2, 17 Dec 1993, https://arxiv.org/abs/gr-qc/9312027v2:

p. 4: "The lesson of these experiments would appear to be that gravity alters the way clocks run. Such a dependence of time on gravity would have been strange enough for the Newtonian view, but General Relativity is actually much more radical than that. A more accurate way of summarizing the lessons of General Relativity is that gravity does not *cause* time to run differently in different places (e.g., faster far from the earth than near it).

"Gravity ***is*** the unequable flow of time from place to place. It is **not** that there are two separate phenomena, namely gravity and time and that the one, gravity, affects the other. Rather the theory states that the phenomena we usually ascribe to gravity are actually caused by time's flowing unequably from place to place.

p. 5: "The crucial point is that one can alternatively explain this essential attribute of gravity by assuming that time flows unequably from place to place, without calling into play any 'force of gravity' at all."

W. Unruh, No Time in Quantum Gravity. In: *Gravitation: A Banff Summer Institute*, ed. by R. Mann, P. Wesson (Singapore: World Scientific, 1991), pp. 260-275.

William G. Unruh and Robert M. Wald, Time and the interpretation of canonical quantum gravity, Phys. Rev. D 40(8), 2598-2614 (1989).

Read also John Baez, Struggles with the Continuum, 1 Feb 2018, arXiv:1609.01421v4 [math-ph]:

"One might hope that a radical approach to the foundations of mathematics – such as those listed above – would allow us to sidestep these problems. However, I know of no significant progress along these lines. (...) Is the continuum as we understand it only an approximation to some deeper model of spacetime? Only time will tell. Nature is providing us with plenty of clues, but it will take patience to read them correctly."

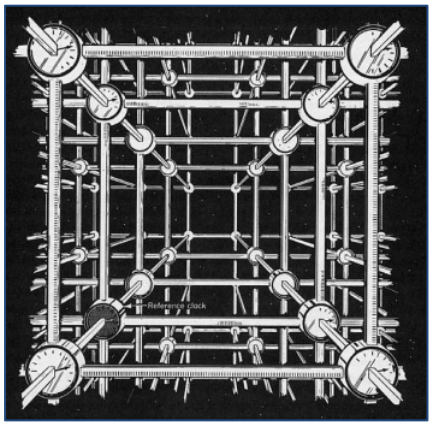
It is extremely difficult to induce penguins to drink warm water (John W. Coleman).

Let me stress that "penguins" like W.G. Unruh, John Baez, and their colleagues have no choice: read the ***facts*** at p. **20**, p. **25**, and p. **39** in Can Geometry Produce Work.

There are three cats in quantum gravity: the grin of the Cheshire cat *without* the cat (as observed by Alice), the Schrödinger's cat, and T.S. Eliot's cat Macavity.

"Space acts on matter, telling it how to move. In turn, matter reacts back on space, telling it how to curve."
J.A. Wheeler in MTW p. 5.

Picture the **bare** grin of the cat *without* the cat as 'spacetime without matter', which is being **re-calibrated**, ever since The Beginning, "in meters of light-travel time": see Fig. **9** in *Spacetime Physics* by E.F. Taylor and J.A. Wheeler (1965, p. 18).

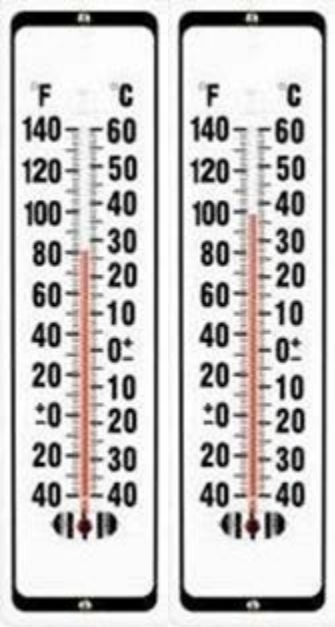


What phenomenon could possibly "calibrate" the **ideal** rods and clocks (MTW p. 397) that are pre-built in spacetime? For if we manage to *tweak* the **matrix** of light-travel time, we should be able to alter the ***rate*** of the light-travel time and **reproduce** **all** the effects of spacetime, called 'gravity' (W.G. Unruh).

As E.F. Taylor and J.A. Wheeler acknowledged: "We assume that *every* clock in the latticework, whatever its construction, has been calibrated in meters of light-travel time." Calibrated? Can "penguins" understand the *origin* of gravity? Let me explain the puzzle.

Suppose you are at your terrace in a summer day. You look at the reading of your air thermometer, which shows 27° Celsius. The air temperature is caused chiefly by the

Sun (the Cheshire cat at the **right-hand side** of the drawing above), so if you decide to increase the reading of your thermometer ***locally***, by heating it with a hair dryer to 37° Celsius (see below), the air temperature at your terrace will not increase.

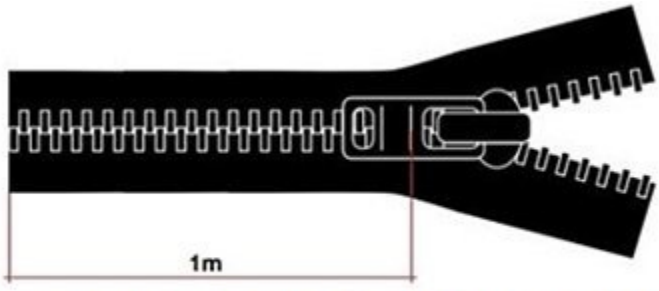


People consider "intuitively obvious" that the **bare** grin of the cat *without* the cat, shown at the **left-hand side** of the drawing above, is like the powerless thermometer.

NB: But how about Earth tides? If you use GR (Wikipedia), how would you relate/convert the alteration of the ***rate*** (W.G. Unruh) of "meters of light-travel time" (E.F. Taylor and J.A. Wheeler) to the *physical* forces of Earth tides?

Not in GR. **No way**. You need to know the **Platonic** origin of gravitational energy. And much more (D.W. Sciama).

Read about the **re**-creation (Slide **1**) and **re-calibration** of spacetime, ever since The Beginning (read above), at p. **25** and p. **39** in Can Geometry Produce Work. Follow the links.



1m = 3.3 nanoseconds of light-travel time

There is nothing "fictitious" in gravity. Unlike the heating of the thermometer above, the tweaking of the complex phase (C.N. Yang) of what people call "quantum waves" does not require energy. My theory of quantum gravity is based on **atemporal offer-and-confirmation** waves (Slide **3**), under perpetual **non-conservation** of energy. Here comes the so-called evolution equation. Will be happy to explain it in details.

On a side note, notice the similarity of the origin of gravity and the action of the human mind on its brain: both gravity and the mind can interact with their respective sources, yet neither gravity nor the mind can be ***physical*** stuff, for different reasons. Read the last paragraph at p. **15** in Time and Continuum: Zenon Manifold.

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Questions and Answers

Q1. What's the point you wish to make with the thermometer?

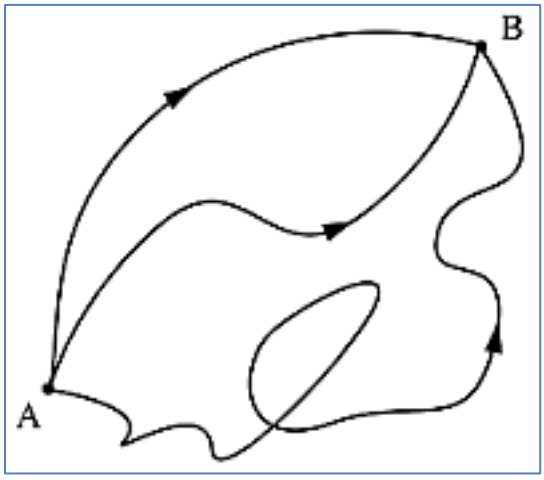
A1. In GR textbooks (Wikipedia), the gravitational energy is wegtransformierbar.

Look at the drawing below: what do you see?

Obviously, this is an elephant walking on a tight rope, only it fell off *exactly* at the instant (Sic!) you looked at it, just like Eliot's cat Macavity. Why? Because in the good old GR textbooks (MTW p. 467) the gravitational energy is ***not*** localizable. It is a weird "non-local" animal (H. Ohanian and L. Szabados). Hence the problem with explaining the Earth tides above.

Let me use another example. Suppose you heat up your coffee in a microwave "that heats and cooks food by exposing it to electromagnetic radiation in the microwave frequency range" (Wikipedia). If you *think* of EM radiation as gravity, you will make it a *physical* field. False. According to your GR textbooks, you may change — by hand — the coordinates of your coffee cup in the microwave to "freely falling coordinates" and turn off the "wegtransformierbar" (read above) microwave. Do you smell rat?

Forget GR (p. **45** in Can Geometry Produce Work). Read again 'three cats in quantum gravity' above. As an illustration (*not* explanation), consider a quantum-gravitational train, which has to reach Hamburg (**B**) from Munich (**A**), depicted below. The train will have to find its path by following the principle of least action, discovered by Gottfried Wilhelm von Leibniz in 1707 (no typo). How? By **anticipating** all *potential* railroads.



Why? Because the quantum-gravitational train does ***not*** have pre-determined railroad ahead. The train ***creates*** its own railroad, as it moves from Munich (**A**) to its infinitesimal *next* step (**A + Δt**), until it ***creates*** its entire railroad to Hamburg (**B**) with the principle of least action. Click here to see how it works. This is the idea of *biocausality* from January 1990: read p. **6** in Can Geometry Produce Work. And since the train is *quantum-gravitational* object, all of its **Platonic** *pre-geometric* states (dubbed John) are "wegtransformierbar" and are **nullified**, leaving only their *physicalized* **4D** "jackets".

Details at the conference ***GRAVITY 21*** (pp. **25**-**26** in Can Geometry Produce Work).

Q2. Do you have experimental predictions? What can you "cook" with your theory?

A2. The theory has unique experimental predictions based on the so-called evolution equation. I hope to explain my equation in details at the conference ***GRAVITY 21*** on 26-27 March 2021 in Munich (mentioned above). As to the second question, I believe can cook you a delicious dinner with my equation: spacetime engineering. If you are tempted to 'drink warm water', read again about the quantum-gravitational train and pp. **5**-**9** in Gravitational Energy.

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