Title - Accelerating Universal Expansion Helps Verify Unified Field Theory

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Abstract –
(This is my reply to the question “On varying speed of flow of time over our life” by G. Ustinova of the Russian Academy of Sciences, at https://www.researchgate.net/post/On_varying_speed_of_flow_of_time_over_our_life?ch=reg&cp=re221_x_p43&pli=1&loginT=N4XcWPfvQsWRojjGYxZQnrHrQhWwYB5vhoxSsdgKaIg,#view=52136dfed3df3e2c2554d8fe)

I first refer to this previous answer to the same question (by Giuseppe Cocco M.D.) before addressing the original question -
After his friend's death A. Einstein wrote to the sister and son: 'Michel has preceded me a little in leaving this strange world. This is not important. For us, who are convinced physicists, the distinction between past, present, and future is only an illusion, however persistent' Einstein-Besso correspondence, Ed. P. Speziali, Paris; Hermann 1972, pp 537-539.

Beginning with a very brief summary of Einstein’s unified field theory and a 50-year-old objection to it, the objection is shown to be invalid (using both Einstein’s words after his friend’s death, as well as taking a 1919 paper by Einstein and building on it). Then the nuclear forces, dark energy and dark matter are woven into a hypothesis of gravity which is dependent on the universe obeying fractal geometry. This geometry places humans in a unified field with space-time’s accelerating expansion, allowing perception of that expansion. Saul Perlmutter, Brian Schmidt, and Adam Riess won the 2011 Nobel Prize in Physics for confirming that our psychological impressions are not purely subjective.

Content -
I believe the illusory nature of time means Einstein's Unified Field Theory is correct. In the 19th century, Scottish mathematician and physicist James Clerk Maxwell unified electricity and magnetism into electromagnetism. Albert Einstein's equations say that in a universe possessing only gravitation and electromagnetism, the gravitational fields carry enough information about electromagnetism to allow the equations of Maxwell to be restated in terms of these gravitational fields. This was discovered by the mathematical physicist George Yuri Rainich (1886 -1968).

England’s Professor Penrose has argued that the gravitational fields, if known everywhere but only for a limited time, do not contain enough information about their electromagnetism to allow the future to be determined, so Einstein's unified theory fails. If "the distinction between past, present, and future is only an illusion" (see abstract), it's clear that all time is unified with the gravitational and electromagnetic fields - meaning the gravitational fields are not known for only a limited time, they do contain enough information, and Einstein succeeded!

Another way of arriving at the conclusion that Einstein succeeded is - suppose Albert Einstein was correct when he said gravitation plays a role in the constitution of elementary particles (in “Do Gravitational Fields Play An Essential Part In The Structure Of The Elementary Particles Of Matter?”, a 1919 submission to the Prussian Academy of Sciences). And suppose he was also correct when he said gravitation is the warping of space-time. Then it is logical that 1) gravitation would play a role not only in elementary particles and their masses but also in the constitution of the nuclear strong force and the weak nuclear force i.e. the nuclear forces may not be separate from gravitation but may be modifications of it, and 2) the warping of space-time that produces gravity means space-time itself plays a role in the constitution of elementary particles, their masses, and in the nuclear forces. Therefore, time is unified with the gravitational and electromagnetic fields.

Not only the two nuclear forces could be seen as aspects of gravity. So could dark energy and dark matter. What if gravity accounts for repulsion as well as attraction on the subatomic scale? For example, the strong force would represent gravity's subatomic attraction while gravity's subatomic repulsion could be viewed as the emission of particles in radioactivity (the weak force is responsible for this). If the universe obeys the laws of fractal geometry, gravity would also account for repulsion and attraction on astronomical and macroscopic scales (it would account for the dark energy pushing galaxy clusters apart as well as familiar concepts of gravity such as attraction of a falling apple to the ground).

The average density of the Milky Way is much less than the solar system. Picture the galaxy, except for the central dense bulge that may be roughly 10,000 light years in diameter, made up of solar systems like ours and separated by 4 or 5 light years (the closest star to the Sun is Proxima Centauri, 4.2 light years away). Within those systems, there is a lot of mass and density in the form of stars, planets, moons, asteroids, comets, gas, and dust. But the vast reaches of near vacuum between systems lowers average density enormously – the MacMillan Encyclopedia of Physics says the average density of matter between the stars of the Milky Way is 0.1 neutral hydrogen atoms per cubic centimetre. Since density corresponds to concentration of wave packets and magnification of gravitational waves, there would be extremely little magnifying of gravity waves in interstellar space. I suspect that if it is (very approximately) 10^15 times or a million billion times less, there would be insufficient gravitational magnification to push or accelerate the stars in the central core or bulge beyond the orbiting speeds of the galaxy’s outermost stars.

In the 1970s, astronomer Vera Rubin concluded outer stars were being sped up by the gravitational attraction of unseen Dark Matter in a halo well beyond the galaxy. This partial revision of gravity states there would be no such thing as dark matter of this nature. However, the term “dark matter” could be used to describe particles in a 5th-dimensional hyperspace, or travelling through time, that would

be invisible but still exert gravitational influence (in a universe structured according to the rules of fractal geometry, 5th dimensional hyperspace would occupy every fermion and boson, alongside space-time).

Changing the subject from the unified field theory back to the original question - we may have varying speed of flow of time during our life because of the accelerating expansion of space-time in the universe. Space is expanding but time is also expanding (and at an accelerating pace). In our youth, it proceeded at a very slightly reduced pace whereas it's going a tiny bit faster now that we've gained experience. So the increased pace is not subjective. If things in space and time were separate (as they appear to be), we certainly could never be aware of this accelerating time - the change in our lifetimes is infinitesimal. But things are different if we humans, and the entirety of space-time, are different aspects of the fractal geometry spoken of in discussion of the unified field theory. We are unified with every step of the universe's past and future expansion. Therefore, we can perceive its accelerating expansion ... which we interpret as our having more time in our youth. Our perception of time moving faster will be interpreted by most people as purely subjective and psychological. But in fact, it supports the idea of fractals i.e. as stated 3 paragraphs ago, it supports gravity accounting for repulsion and attraction not merely on quantum scales but, fractally, also on astronomical and macroscopic scales (it would account for the dark energy pushing galaxy clusters apart as well as familiar concepts of gravity such as attraction of a falling apple to the ground).