

NEWTON, EINSTEIN, HAWKING EXPLAIN DARK ENERGY, DARK MATTER, COSMIC MYSTERIES

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Abstract -

The idea of gravitational-electromagnetic coupling producing mass, first hinted at by Albert Einstein, allows Isaac Newton's laws of motion and gravitation to be looked at differently. In turn, this gives a new perspective on dark energy, dark matter and expansion of the universe. The work of Stephen Hawking also proved essential to writing this article, which grew out of a discussion I started on the vixra forums (Ramanujan/Einstein are lucky they lived b4 modern "science" - <http://vixra.freeforums.org/viewtopic.php?f=11&t=755>). As I wrote there, "I've been thinking about John's comments on motion and gravity, as well as Harry's on expansion of the Universe. I started writing a reply and during the last week, I've found it getting combined with other thoughts of mine. In an attempt to explain everything that's relevant, it's been combining with other ideas I've previously written as well as new ideas that come to me while I'm typing, or sleeping. It surprises me, but all the ideas seem to fit together and they seem plausible (if somewhat speculative sometimes) when I check scientific references. So far, I've written 6,000 words and there's a lot more to cover in the rough draft I wrote. That's too much to post in the forum, so it'll have to be an article on vixra.org". By the way, this article reminds me of a "Star Trek" movie I saw in which Spock was writing something but was tempted to stop because it was so hard and seemingly beyond his abilities. Captain Kirk visited him from a year in the future and told Spock he would succeed. I've often felt tempted to give up on my typing. There have been no time-travelling visitors but the ideas that came to me were so satisfying - they encouraged me to somehow reach the end.

Keywords -

revised string theory; real, imaginary and complex dimensions; Special and General Relativity; $E=mc^2$; cosmic unification; quantum physics

Acknowledgements – no funding

Content -

INTRODUCTION

The 2012 article "How Einstein Discovered Dark Energy" by Alex Harvey (<http://arxiv.org/pdf/1211.6338v1.pdf>) states, "Recall that in 1918 the only elementary particles known were the electron and the proton. Physicists were attempting to understand why these were stable despite their internal electromagnetic repulsion. Most attempts were based solely on electromagnetic theory. For a review of these efforts see W. Pauli, "Theory of Relativity", Pergamon Press, London (1958). See Part V, p.184 ff]. Einstein's effort was to construct a model in which stability was achieved through the use of gravitational forces. In particular, he used modified gravitational field equations which included the cosmological constant. [Albert Einstein's "Spielen Gravitationfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?" (Do gravitational fields play an essential role in the structure of elementary particles?), *Sitzungsberichte der Preussischen Akademie der Wissenschaften, (Math. Phys.)*, 349-356 (1919) Berlin]

Transformation of gravitational-electromagnetic interaction into matter could be via photons of electromagnetic waves and gravitons of gravitational waves being disturbances in electromagnetic and gravitational fields. These disturbances are known as virtual particles and are equivalent to energy pulses ("A Brief History of Time" by Stephen Hawking - Bantam Press 1988, p.69 relates the virtual photons which can never be directly detected to the real photons that are the energy pulses within light waves). Those pulses produce the binary digits of 1 and 0 encoding π , e , $\sqrt{2}$ etc. Matter particles [and even bosons like the Higgs, W and Z particles] are given mass by the energy of photons and gravitons interacting in "wave packets" (interaction within this term from quantum mechanics results in wave-particle duality). Production of the Higgs boson by gravitational-electromagnetic coupling means that interaction could more succinctly be called "the Higgs field". This is indeed plausible since, despite the Large Hadron Collider's discovery of a Higgs-like boson in 2012, alternative versions of Higgs theory still circulate in science in which the role of the Higgs field is played by various couplings (see M. Tanabashi; M. Harada; K. Yamawaki. Nagoya 2006: "The Origin of Mass and Strong Coupling Gauge Theories". International Workshop on Strongly Coupled Gauge Theories. pp. 227–241.

MOTION

A DVD stores data as bits and bytes (actually, gigabytes). A gigabyte is 1 billion bytes and a byte is the common name for 8 bits or binary digits (each bit is represented as either 1 or 0: they represent any two-valued state, such as on and off, or + and -). When future electronics allows their displays to change from one still (as in photographic print) to another trillions of trillions of times per second, they are undergoing what we call motion or the passage of time. Were ancient Greek philosophers Zeno of Elea and Parmenides at least partly correct to speak of the absurdity of reality being made up of many changing things? Zeno also said motion is absurd. Motion and change would, in the end, merely be the switching of 1's to 0's and vice versa. There wouldn't even be any motion (neither switching nor randomness) if distance is eliminated between gravitons, and the 1's and 0's which they generate exist as a quantum-superposed qubit (the basic element of information in quantum computing - just as "bit" is an abbreviation for "binary digit" in ordinary computers, "qubit" stands for "quantum bit" in quantum computers). How can distance be deleted?

A 2009 electrical-engineering experiment at America's Yale University demonstrated that, on silicon-chip and transistor scales, light can attract and repel itself like electric charges or magnets ["Tunable bipolar optical interactions between guided lightwaves" by Mo Li, W. H. P. Pernice & H. X. Tang - Nature Photonics 3, 464 - 468 (2009)]. Einstein believed electromagnetism (light is one form of this) and gravitation were related. Maybe the relation is in the form of photons and gravitons being different compositions of 1's and 0's. Then gravitation could also attract and repel itself at quantum scales - see later reference to "real" gravity and "complex" gravity both existing on (being "attracted to") the horizontal x-axis of the Complex Number Plane ... while the gravitational waves composing them move in opposite directions in time ("repel" each other). From the viewpoint of cosmic non-unification, real gravitons proceeding forwards in time would glance off complex gravitons going back in time. From the perspective of electromagnetism unified with gravitation, the 1's and 0's composing all the gravitons (and photons too) could be programmed to attract and "exist as a quantum-superposed qubit" ie distance is eliminated (see **DISTANCE = 0, EINSTEIN'S UNIFIED FIELD THEORY AND TRAVEL INTO PAST ALL CONTAINED WITHIN $E=MC^2$**).

I've heard that if all the space was removed between atoms making up our bodies, the entire human race would be compressed to the size of a sugar cube. And this is before the proposal that distance is deleted between the virtual particles (virtual photons and gravitons) composing those atoms and the space-time between them. How tiny would the observable universe become if there was no space between its virtual gravitons and the rearrangement of their binary digits into virtual photons? It would probably occupy the infinitesimal volume of a singularity. And yes, the last two paragraphs are saying electromagnetism is a product of gravity. True to the nonlinear nature of time (it's arranged in Einstein's warps and curves), it's also correct that gravity is a product of

electromagnetism – in the form of electronic pulses of energy from computers connected to sources of electrical power manifesting as virtual gravitons. If time was linear and always operated in a straight line, the origin of gravitation/electromagnetism must be with God or be the result of quantum fluctuations and evolution. But since time is nonlinear, origins can be with anybody who has computers (even humanity).

DISTANCE = 0, EINSTEIN'S UNIFIED FIELD THEORY, AND TRAVEL INTO PAST ALL CONTAINED WITHIN $E=MC^2$

I think $E=mc^2$ supports this idea of deleting distance. The formula is, of course, Albert Einstein's famous equation relating energy, mass and the speed of light [Einstein, A. (1905) - "Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?" ("Does the inertia of an object depend upon its energy content?" - Annalen der Physik 18 (13): 639-643]:

Let's represent the masslessness of photons by 0 (zero), and also the masslessness of the theoretical gravitons by zero. Should theories developed from Einstein's 1919 paper regarding mass be proven correct one day ie that mass results from photon-graviton interaction, we can replace the m with zero. This results in $E=0*c^2$ ie outside familiar circumstances, it is possible for E to equal 0. Having reduced the equation to nothing but E , $m=0$ and $c^2=0$ which means $m=c^2$. At first glance, $m=c^2$ seems to be saying mass exists at light speed. But the absence of E (energy) refers to there being no interaction of light energy and gravitational energy, and therefore no mass. If mass cannot be produced, mass-producing space-time/gravity must be described by zero. The zeroness of space-time/gravity does not mean they don't exist. It means we can appear to relocate matter and information superluminally, or travel into the past and future, because distance equals zero and can be eliminated from both space and time.

In the preceding paragraph, it's shown that $m=c^2$ when $E=0$ ie when no interaction of light energy and gravitational energy exists (see the next section "What's a Black Hole?") Describing spacetime by zero gives the impression that it doesn't exist. It obviously does, so the conclusion that zero means distance can be eliminated is accurate. Distance obviously exists, too. It is merely suggested that it's possible to delete it.

When distance is eliminated, more than the space between objects is deleted (this allows intergalactic travel). Space within objects can be deleted, too (permitting a singularity to have zero size). Therefore, removing distance easily unifies everything in space-time into one thing - a product of the gravitational field. All past and future

universes are unified with the present cosmos (is this the real meaning of the word "multiverse"?)

$E=mc^2$ may have led Einstein to his General Relativity and Unified Field theories, to give physical meaning (in the form of gravitation) to the mathematics. As far as I know, he never specifically mentioned such a connection. Was Einstein as ignorant of the magnitude of his accomplishment as the rest of us?

"Physics of the Impossible" by Michio Kaku (Penguin Books, 2009) states on pp. 276-277, "When we solve (19th-century Scottish physicist James Clerk) Maxwell's equations for light, we find not one but two solutions: a 'retarded' wave, which represents the standard motion of light from one point to another; but also an 'advanced' wave, where the light beam goes backward in time. Engineers have simply dismissed the advanced wave as a mathematical curiosity since the retarded waves so accurately predicted the behavior of radio, microwaves, TV, radar, and X-rays. But for physicists, the advanced wave has been a nagging problem for the past century." Suppose Einstein was correct about the gravitational fields carrying enough information about electromagnetism to allow Maxwell's equations to be restated in terms of these gravitational fields. Then gravitational waves would also have an "advanced" solution.

$E=mc^2$, when viewed as $E=0$ and $m=c^2$, also supports this article's statement that gravitational ripples proceed in the "reverse" direction along the horizontal axis (not in so-called 'real' time, but in 'complex' time. This is because $m=c^2$, and those two can only create 0^* if, purely for example, m represents the retarded wave of light travelling forward in time - and, again purely for example, c^2 represents the advanced wave of gravitation travelling backward in time. If mass and matter are products of gravitational-electromagnetic interaction, matter can also travel into the past.

*E = no distance between: electromagnetic and gravitational energy (because of rearrangement of binary digits composing photons and gravitons); resultant mass including matter (along with its nuclear forces); space and time (their warps are gravity ... and also because of imaginary time); any dimensions (because of the multi-directionality of gravitational waves in both space contexts and time contexts). More detailed explanations are distributed throughout this article.

WHAT'S A BLACK HOLE?

The zeroness of space-time/gravity does not mean they don't exist. They obviously do. It means we can appear to relocate matter and information superluminally, or travel into the past and future, because distance equals zero and can be eliminated from both space and time. A supernova blows off gaseous material before exploding - forming a slower moving, cooler shell^{^^}. Travelling at light speed, gravitational and electromagnetic radiation from the blast slams into that material. The temperature allows the gravitons' energy to interact with the photons', producing mass in the form of dust i.e. dust particles condense in the shell. Waves from deep space produce graviton-photon interaction, forming collapsing clouds from which stars form. If there's no interaction (possibly as a result of temperatures), no matter is created and there is no cloud of gas and dust. A black hole – formed of gravitational waves and electromagnetic waves - could result.

^{^^} Gall, C.; Hjorth, J.; Watson, D.; Dwek, E.; Maund, J. R.; Fox, O.; Leloudas, G.; Malesani D.; DayJones, A. C. "Rapid formation of large dust grains in the luminous supernova 2010jl". - Nature, Volume 511, Issue 7509, pp. 326329 (17 July 2014). It was published online on July 9, 2014
(<http://www.nature.com/nature/journal/vaop/ncurrent/full/nature13558.html>)

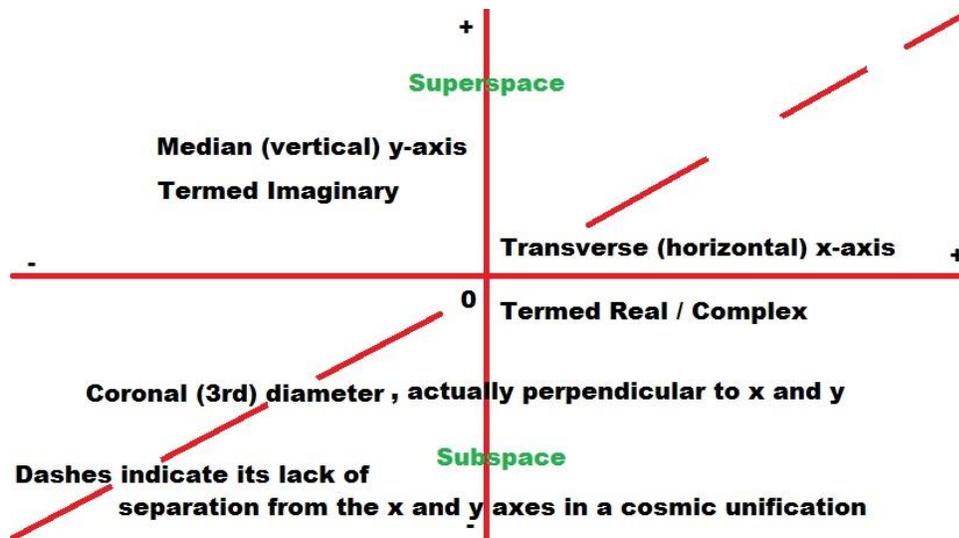
In the previous section, it was shown that $m=c^2$ when $E=0$: that is, when no interaction of electromagnetic energy and gravitational energy exists eg in the temperatures of black holes. This means space-time/gravity equals zero, which doesn't mean that black holes' gravitational effects are diminished but that distance equals zero. The absence of distance (in time as well as space) inside black holes makes them potential tools for time travel [Morris, Michael; Thorne, Kip; Yurtsever, Ulvi (1988). "Wormholes, Time Machines, and the Weak Energy Condition". Physical Review Letters 61 (13): 1446–1449].

COMPLEX NUMBER PLANE

So-called imaginary time is a concept derived from special relativity and quantum mechanics. Geometrically, imaginary numbers are found on the vertical axis of the Complex Number Plane, allowing them to be presented perpendicular to the real axis. One way of viewing imaginary numbers is to consider a standard number line, positively increasing in magnitude to the right, and negatively increasing in magnitude to the left. At 0 on this x-axis (the so-called 'real' axis), a y-axis (the so-called imaginary axis) can be drawn with "positive" direction going up - "positive" imaginary numbers then increase in magnitude upwards, and "negative" imaginary numbers increase in magnitude downwards. ("Positive" numbers increasing upwards correspond to superspace and

imaginary time, while "negative" numbers increasing downwards describe subspace and imaginary time. *) Visualize space-time as defined by a horizontal diameter, a vertical diameter, and a third diameter that's perpendicular to both of these. These represent the cardinal directions gravitational waves can travel. One direction along the horizontal axis corresponds to going forwards in time and is called "real". The reverse direction along the horizontal axis corresponds to going backwards in time and is called "complex". The vertical axis represents the "imaginary time" described by the imaginary numbers of physics. The terms real, imaginary and complex come from the corresponding numbers in maths. And the 3rd diameter may allow sideways movement in time - to complement forward motion in time, backward motion, and up-down movement in imaginary time.

*Perhaps the real space/imaginary time combination is, to borrow a word from science fiction (and mathematics too), known as subspace. This could be interpreted in the diagram below as subspace having a definite position (represented in the sketch by a line). Superspace has a location too. Superspace is regarded in particle physics as the outcome of the theory of supersymmetry (SUSY) which relates the two classes of elementary particles – bosons (force-carrying particles) and fermions (particles of matter). This article relates bosons to fermions through binary digits and the Mobius strip. You have to go around this strip twice to arrive at your starting point - and matter particles have quantum spin described as $\frac{1}{2}$, which means they must be turned through two complete revolutions to look the same ("A Brief History of Time" by Stephen Hawking – Bantam Press, 1988, pp.66-67). In this article, superspace is the aggregate of all the spaces and includes sub-, real, and complex space. The world's largest and most powerful particle collider, the Large Hadron Collider (LHC) on the France-Switzerland border, has found no evidence for supersymmetry thus far and some physicists have decided to explore other ideas (Ellis, John: "The Physics Landscape after the Higgs Discovery at the LHC": 14 April 2015: [arXiv:1504.03654](https://arxiv.org/abs/1504.03654))



It is suggested here that imaginary time should be joined with an imaginary space, and complex space with complex time. To introduce you to the idea of extra dimensions, consider this - Itzhak Bars of the University of Southern California in Los Angeles says, "one whole dimension of time and another of space have until now gone entirely unnoticed by us". ("Are we missing a dimension of time?" by Roger Highfield, 10 Oct 2007, <http://www.telegraph.co.uk/news/science/large-hadroncollider/3309999/Are-wemissing-a-dimension-of-time.html>). Following the suggestion in this article you're reading means the universe would be comprised of 3 time dimensions (real, imaginary, complex) and 5 space dimensions (real length, width and depth combined with the imaginary and complex).

Progress on the imaginary axis (the vertical y-axis) of the Complex Number Plane is always in the "up" or "down" direction. So travelling in imaginary time means no time at all passes in familiar real time. A spacecraft using imaginary time, but real space, could fly to Mars or a galaxy many billions of light-years distant without any time elapsing in real time. Just as imaginary time deletes all the years, days, nanoseconds (billionths of a second) and other units from our experience in real time; imaginary space such as subspace might delete all space and distance from our experience in real space. A sentence by Professor Stephen Hawking seems to support this concept. He writes - imaginary time (something physicists and mathematicians are already familiar with, though only in an abstract sense at present) has "an interesting effect on space-time: the distinction between time and space disappears completely." ("A Brief History of Time" by Stephen Hawking - Bantam Press, 1988, p.134). In other words – if the imaginary realm deletes time and seconds, it also deletes space and distance. So a spaceship using imaginary time and imaginary space might encounter no distances in space nor any

intervals of time. It'd exist in a cosmic unification and would be everywhere in space and time at once.

Stephen Hawking also writes, "In real time, the universe has a beginning and an end at singularities that form a boundary to space-time and at which the laws of science break down. But in imaginary time, there are no singularities or boundaries. So maybe what we call imaginary time is really more basic ..." ("A Brief History of Time" by Stephen Hawking - Bantam Press, 1988, p.139). Imaginary time must interact with real space-time because Hawking says it makes "the distinction between time and space disappear completely." Surely imaginary time's total lack of boundaries means the spaceship is not confined to any part of the time or space in our regular space-time for even the most infinitesimal fraction of a nanosecond. Absolutely any restriction would constitute a boundary, and imaginary time has no boundaries. So we have another indication that the ship would exist in a cosmic unification and would be everywhere in space and time at once. This paragraph describes a method of "programming" the 1's and 0's composing all the gravitons (and photons too) ... to attract and exist as a quantum-superposed qubit.

So how might it be possible to leave behind the boundaries and non-unification we find in real space-time? How can we explore the wonders of imaginary space-time and complex space-time? Imagine a spaceship, its occupants and its computers are made of space. Or if you prefer, of the gravity (curvature of space) first spoken of in Einstein's 1919 paper "Do gravitational fields play an essential role in the structure of elementary particles?" Then the space, and time, could be gravitationally warped 90° and the ship etc would be inverted, and would enter subspace and imaginary time. But warping needn't stop there. Since the universe is modelled on the Möbius strip (see "Topological Universe"), warping can continue to the extreme curvature of hyper-spacetime's 180° - where it includes imaginary time but the gravitational ripples have "flipped backwards" from the horizontal axis of real time, through the vertical axis of imaginary time, and proceed in the "reverse" direction along the horizontal axis (in complex time ie occupants and computers go into the past). Using imaginary time but real space (as in the flight to Mars) would involve more complicated warping.

Related to a spaceship and its contents being made of space is the condition of there being 2 forms of spin - classical (e.g. a rotating top) and quantum. The latter can't be explained classically but may possibly be explained by particles and space mutually affecting each other. According to General Relativity, matter causes a gravity field by its mass creating depressions in space that can be pictured as a flexible rubber sheet. Space could affect particles through its curvature (gravity) infiltrating particles, thus giving them quantum spin. Curvature implies this quantum spin could be continuous. Since it's known this type of spin can only have discrete values, these values (and space's curves) must

be determined by discrete pulses of energy that also transmit information (virtual particles plus the binary digits of 1 and 0 possess this property). Space's curves influencing particles is consistent with Einstein's previously mentioned paper "Do gravitational fields play an essential role in the structure of elementary particles?" Space has gravitational qualities, while particles have electric and magnetic properties. Just as interference between light waves makes a hologram, interference between electromagnetic and gravitational waves might make mass and Einstein's version of modern science's holographic universe (he believed electromagnetism and gravitation were related).

GRAVITY

Some of the ocean waves passing an island are refracted - when they enter shallow water, they're refracted by the mass of the seabed. They change direction and head towards the island, breaking onto its beaches. Similarly, gravitational waves are refracted and focus on the centre of a mass. Exerting a force on that centre (a push) in partnership with the extremely energetic electromagnetic waves they produce, the gravitation builds up more mass concentrically with the centre to create a subatomic particle or a planet. Newton's mathematics describes the gravitational force very well even though he describes gravitation as an attractive pull. Einstein says it's a push. To quote from the article "Gravitation" by Robert F. Paton, MS PhD in "The World Book Encyclopedia" (Field Enterprises Educational Corporation, 1967): "(Bodies) merely follow the line of least resistance through the hills and valleys of the curved space that surrounds other bodies. Objects that fall to the earth, for example, are not "pulled" by the earth. The curvature of space time around the earth forces the objects to take the direction on toward the earth. The objects are pushed toward the earth by the gravitational field rather than pulled by the earth."

As the refracted gravitational wave passes, part of it is diverted by mass (the more mass, the more gravity is diverted; though the International Space Station weighs around 400 tons, it has tiny mass compared to any planet and produces so-called weightlessness while black holes – ranging from about 3 solar masses for the smallest stellar variety to billions of solar masses for supermassive black holes in galaxy centres – have so much mass and diverted gravity that light pushed into them may be unable to escape).

Entering a black hole on anything except a very special pathway into it is predicted to cause you to be shredded into long, thin pieces – a process called spaghettification, and caused by the black hole's tidal forces (differences in its gravitational effect on an object's nearer and more distant ends). The relatively insignificant gravitational forces associated with Earth push your head and feet down without any noticeable difference, though the

difference does exist. Experimenters have shown that a clock on the ground floor of a building 25 metres tall runs more slowly than one near its top, and attributed the difference to gravitational effects ("The Cosmos", a 1988 book in the series "Voyage Through the Universe": Time-Life Books Inc., p.50). Assuming you fall feet first - the extreme gravitational waves associated with a black hole push your head towards the hole with tremendous force but are vastly magnified by addition of many more waves in the 5 or 6 feet between one end of you and the other. This results in your feet being much, much closer to the black hole's centre and you become a long, thin strand of "space-ghetti" ☺

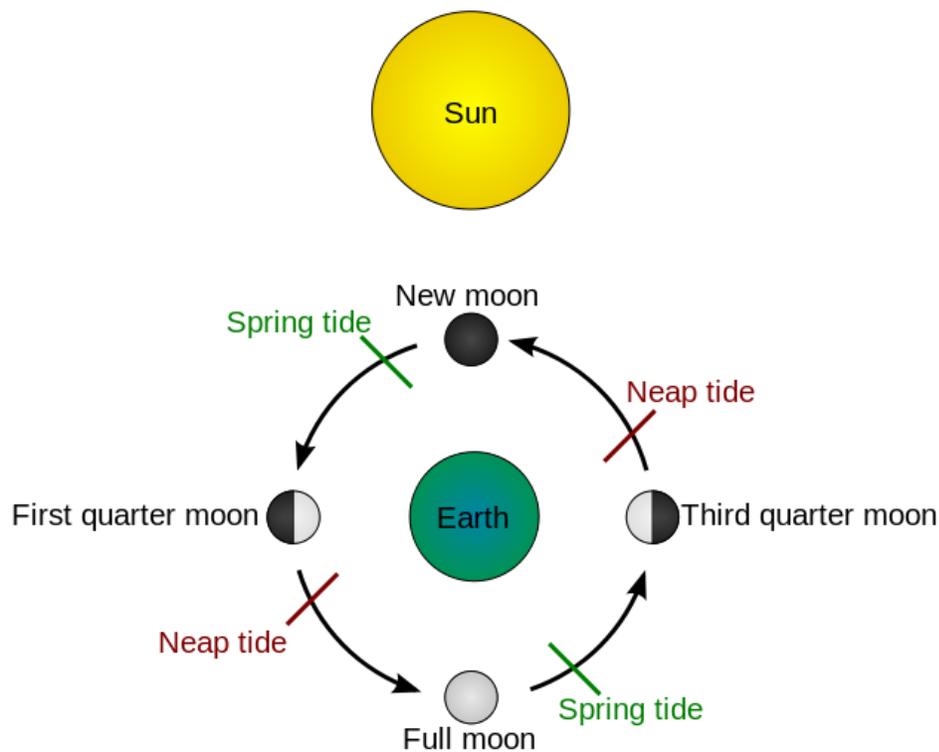
How, then, can repelling or pushing gravity account for the apparent attraction of ocean tides towards the Moon? I believe such an idea of gravity requires the idea of 17th-century scientists Isaac Newton and Johannes Kepler that the moon causes the tides, to be joined with Galileo's idea that the Earth's movements slosh its water. According to "Galileo's Big Mistake" by Peter Tyson - Posted 10.29.02 (<http://www.pbs.org/wgbh/nova/earth/galileo-big-mistake.html>) -

"If a barge (carrying a cargo of freshwater) suddenly ground to a halt on a sandbar, for instance, the water pushed up towards the bow then bounced back toward the stern, doing this several times with ever decreasing agitation until it returned to a level state. Galileo realized that the Earth's dual motion—its daily one around its axis and its annual one around the sun—might have the same effect on oceans and other great bodies of water as the barge had on its freshwater cargo."

Gravity's apparent attraction can be summarized by the following - gravitation is absorbed into wave packets and the inertia of the gravitons (united with far more energetic photons) carries objects towards Earth's centre at 9.8 m/s or 32 ft/s. The mass of the oceans on Earth is estimated at nearly 1.5 billion cubic kilometres ["Ocean Volume and Depth" – Van Nostrand's Scientific Encyclopedia, 10th edition 2008]. All this water is being pushed towards Earth's centre at 32 feet per second every second. But the seafloor prevents its descent. So there is a recoil, noticeable offshore (it is only where oceans and continents meet that tides are great enough to be noticed). This recoil is larger during the spring tides seen at full and new moon because sun, Earth and moon are aligned at these times.

The previous paragraph's alignment of Sun, Earth and moon therefore refers to their being lined up where the gravitational current is greatest (in the plane where planets and moons are created) - and to more of the gravitational waves travelling from the outer solar system being captured by solar and lunar wave packets, and less of them being available on Earth to suppress oceanic recoil (there are still enough to maintain the falling-bodies rate of 32 feet per second per second). At the neap tides of 1st and 3rd quarter; the sun,

earth and moon aren't lined up but form a right angle and our planet has access to more gravity waves, which suppress oceanic recoil to a greater degree. We can imagine the sun and moon pulling earth's water in different directions at neap tide. If variables like wind/atmospheric pressure/storms are deleted, this greater suppression causes neap tides which are much lower than spring tides.



After absorption by atoms (whether in oceans, in space, or anywhere else), the depleted remnant of the gravity waves is re-radiated from stars, planets, interstellar gas and dust, etc. It's radiated as gravitational waves (a Gravity Wave Background, challenging the idea that the traditional form of Cosmic Inflation was necessary to generate gravitational waves) which have lost most of their energy or strength during formation of mass and electromagnetic/strong nuclear/weak nuclear forces (returning to the weak strength we're familiar with). Maybe the gravitational force is split into the other 3 forces by means of quantum gravitational lensing, whose non-subatomic-scale counterpart can split the image of an astronomical object into several images. Since gravity can produce electromagnetism, it's also radiated as all types of electromagnetic waves – including an infrared background whose heat output exceeds that of the stars alone, in addition to a microwave background. The latter challenges the idea that existence of the cosmic microwave background proves the universe began with the traditional Big Bang. The basic problem with science's understanding of the Big Bang is that everyone believes

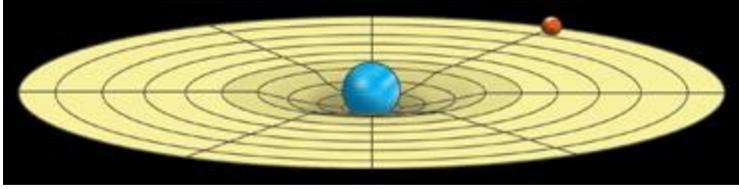
time only exists in one version (see 3 time dimensions/5 space dimensions, and Professor Itzhak Bars, in **COMPLEX NUMBER PLANE**).

If a star only received the input of gravitational waves from deep space entering it, there would be no limit to its potential growth. Since it also radiates mass-forming gravitational waves, there is a limit to the growth. 99% of the solar system's mass / gravity / gravitational waves are associated with our star, so the gravitational push on Earth from its sphere may be slightly greater than the push from the waves originating in deep space. The waves from deep space are a possible unrecognized contributing factor to the Pioneer anomaly, where the Pioneer spacecraft near the solar system's edge are a few thousand kilometres closer to the Sun than predicted. In the end, our planet's orbit would be growing slowly larger. According to "Secular Increase of Astronomical Unit from Analysis of the Major Planet Motions, and Its Interpretation" in "Celestial Mechanics & Dynamical Astronomy", Volume 90, Issue 3-4, 2004, pp. 267-288 by Krasinsky, G.A. and Brumberg, V.A.; the distance between Sun and Earth is growing by approx. 15 centimetres per century. The two authors attribute this increase of the Astronomical Unit (AU – the average distance between Earth and the Sun) to dark energy.

Gravity's a push and the reverse motion of complex gravity causes complex gravity to act in the reverse manner - as a pull (see picture from "Universe Today" below). In real space-time, the blue "Sun" lies in a depression or valley, and the brown "Earth" rolls towards it. We could say gravity pushes ... gravitational waves push ... Earth to the Sun. But in complex space-time, the blue "Sun" instead sits on a high hill, and the brown "Earth" rolls away from it. We could say complex gravity pulls ... complex gravitational waves pull ... Earth away from the Sun. In regard to the "Universe Today" picture, it'd be convenient, though less accurate, to say gravity and gravitational waves push Earth away (because the push is "towards the Sun"). In regard to the increasing AU, speaking of pushing gravity and its waves is accurate. So instead of attributing increase of the Astronomical Unit to dark energy, it can be attributed to the push of gravity and gravitational waves or the pull of complex gravity and complex gravitational waves. When Isaac Newton described gravitation as a pull attracting objects, was his genius unconsciously reaching into the 21st century and anticipating complex gravity?

<http://www.universetoday.com/75705/where-does-gravity-come-from/>

A 2-dimensional animation of how gravity works. Via NASA's Space Place..



NEGATIVE ABSOLUTE TEMPERATURE, LIFE AND COSMIC UNIFICATION

To give a brief explanation of negative temperature, here's what Simple English Wikipedia says on the subject (https://simple.wikipedia.org/wiki/Negative_temperature):

"In physics, absolute zero (0°K) is one of the coldest temperatures. At that point, subatomic particles stop moving (entropy is at its minimum). Certain things can reach temperatures below absolute zero, known as negative temperatures. This is very difficult to do (the FAQ below says laser beams, a magnetic field and a vacuum chamber are employed), and only very small objects can reach negative temperatures. It might seem absurd, but things at negative temperatures are actually hotter than things at positive temperatures (above absolute zero). If something with a negative temperature comes in contact with a positive-temperature object, heat will go from the negative object to the positive. This is because temperature is a trade-off between energy and entropy. If you add energy to a positive-temperature object, it will increase in entropy. If you add energy to a negative-temperature object, it will decrease in entropy. Many objects cannot achieve negative temperatures, because adding energy to them will increase their entropy. Only very small things discussed in quantum mechanics can reach this state." I also refer you to Frequently Asked Questions by two authors of the original paper (<https://www.quantum-munich.de/research/negative-absolute-temperature/>). The FAQ has a link to their paper at the top of the page.

"Energy and Order in Biological Systems" (<http://hyperphysics.phy-astr.gsu.edu/hbase/thermo/bioentropy.html>) asks: "The concept of entropy and the second law of thermodynamics suggest that systems naturally progress from order to disorder. If so, how do biological systems develop and maintain such a high degree of order?" Could this high degree of order result from living things being negative-temperature systems that have gravitational and electromagnetic energy constantly added to them? As Wikipedia says in the quote above: "If you add energy to a negative-temperature object, it will decrease in entropy" (entropy may be regarded as disorder). The statement "Only very small things discussed in quantum mechanics can reach this state" would then be inadequate. Living things, as well as quantum things, would

decrease in entropy when energy is added. In other words, the quantum and macroscopic worlds are united.

"If something with a negative temperature comes in contact with a positive-temperature object, heat will go from the negative object to the positive." That means the bodies of all living organisms can sooner or later pass all their energy to the environment - their bodies will wear out and perish if not refreshed by energy. The fact that life also has positive temperature suggests that life and the Universe (life's environment) are not separate in a physical sense but are united. They could merely be different manifestations of one gravitational-electromagnetic field. It also implies that life doesn't need to ever end. In the beginning of this article, I referred to never-ending numbers such as pi and how they might be built into the fabric of space-time via virtual particles being energy pulses that result in binary digits which encode pi, e, $\sqrt{2}$ etc. If endless transcendental numbers are built into the basic structure of the Universe, isn't it possible that the Cosmos extends infinitely in space and, since space can never exist apart from time, that it reaches eternally into the past and eternally into the future? And if life is not physically separate from its cosmic environment, our lives would never end (our bodies might, but even those might have the potential to go on forever).

In the concluding chapters of "Contact" by Carl Sagan (Century Publishing, 1986), much is devoted to pi. True, it's a novel - a work of fiction. But as the front flap says, "It is a novel which carries the reader to the stars, without ever making us doubt that this is the way it will be." Page 430 tells us, "The universe was made on purpose ... As long as you live in this universe, and have a modest talent for mathematics, sooner or later you'll find it (pi being in the fabric of space) ... There is an intelligence that antedates the universe." But don't rush off to church just yet! This intelligence may well be home-grown. In the TV program "Custom Universe – Finetuned For Us?" (Australian Broadcasting Corporation's "Catalyst", August 29 2013), Dr. Graham Phillips reported that "the physicist and writer Paul Davies thinks the universe is indeed fine-tuned for minds like ours. And who fine-tuned it? Not God but minds from the future, perhaps even our distant descendants, that have reached back through time ... and selected the very laws of physics" (as well as, this author thinks, the electronic energy pulses known as virtual particles) "that allow for the existence of minds in the first place. Sounds bizarre, but quantum physics actually allows that kind of thing."

DARK ENERGY, DARK MATTER AND TIME-TRAVEL PARTIES

According to "Quantum gas goes below absolute zero - Ultracold atoms pave way for negative-Kelvin materials" by Zeeya Merali (<http://www.nature.com/news/quantum-gas->

[goes-below-absolute-zero-1.12146](#)): negative-Kelvin might help solve a cosmic mystery because "Another peculiarity of the sub-absolute-zero gas is that it mimics 'dark energy', the mysterious force that pushes the Universe to expand at an ever-faster rate against the inward pull of gravity." It does not seem necessary to invoke the existence of dark energy. The force acting against gravity could be gravity. Specifically, the gravity we know would be "real" gravity and it would be opposed by "complex" gravity. If real gravity is involved in ordinary matter's mass-production, complex gravity must be involved in the mass-production of other matter called "dark".

"Physics of the Impossible" by Michio Kaku (Penguin Books, 2009) states on p.276, "When we solve (19th-century Scottish physicist James Clerk) Maxwell's equations for light, we find not one but two solutions: a 'retarded' wave, which represents the standard motion of light from one point to another; but also an 'advanced' wave, where the light beam goes backward in time. Engineers have simply dismissed the advanced wave as a mathematical curiosity since the retarded waves so accurately predicted the behavior of radio, microwaves, TV, radar, and X- rays. But for physicists, the advanced wave has been a nagging problem for the past century."

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. Suppose Einstein was correct - then gravitational waves would also have an "advanced" solution. Not only does the light beam go backward in time, a gravity wave would too. Dark matter may be made by complex gravity (Einstein's advanced gravitational waves that travel backwards in time). If normal gravity combines with electromagnetism to make matter, dark matter's production would be in association with complex electromagnetism (Maxwell's advanced electromagnetic waves going back in time).

[^] Modern science adds the nuclear weak and strong interactions, for a total of 4 fundamental forces. It's claimed that Einstein never paid enough attention to the nuclear forces while developing the unified field theory. But commonsense says a scientist of his proven abilities must have considered them carefully. I suspect he concluded the nuclear forces are no more than byproducts of gravitational-electromagnetic interaction, and therefore not fundamental.

"Physics of the Impossible" continues on pp. 277-278: "These advanced waves were a mystery until they were studied by (20th-century American) physicist Richard Feynman, who revealed the true secret of antimatter: it's just ordinary matter going backward in

time." He arrived at this conclusion by analyzing the work of Paul Dirac on the electron a few decades before, and finding something very strange. Kaku explains, "If he simply reversed the direction of time in Dirac's equation, the equation remained the same if he also reversed the electron charge. In other words, an electron going backward in time was the same as an antielectron going forward in time!"

This article has spoken of gravity waves going back in time, and of all matter resulting from gravity. This produces "ordinary matter going backward in time." Particles with space-time (gravitational) warping that's equal to hyperspace's (complex space's) dark particles might, since gravity makes both matter and the electric charges of electromagnetism, be known as the oppositely-charged antiparticles. If the warps creating dark matter are equivalent to the warps creating antimatter, dark matter would not only equal antimatter going backwards in time but would also be ordinary matter - like the electron mentioned above - travelling forwards in time. If the particles come from our future, they're called antimatter while in our present. When they travel to our past - either immediately or after a delay of varying length - they become dark matter. This means "... 'dark matter' might be just ordinary matter", which was suggested by Nima Arkani-Hamed in an interview about his paper ["The hierarchy problem and new dimensions at a millimetre" by N. Arkani-Hamed, S. Dimopoulos, G. Dvali - Physics Letters B - Volume 429, Issues 3–4, 18 June 1998, Pages 263–272].

If ordinary matter from the future is antimatter in our present, I'd advise people from the future not to interact with us physically because matter and antimatter instantly annihilate each other on contact: giving rise to energy (mental interaction of any kind is fine – indeed, welcome!) On June 28 2009, Professor Stephen Hawking invited time travellers to a party at Cambridge University in England. No-one came, and Professor Hawking offered this as 'experimental evidence that time travel is not possible'. But maybe nobody came because they didn't wish to annihilate the Prof, the Uni and themselves.

Read more: <http://www.dailymail.co.uk/sciencetech/article-2168178/Stephen-Hawking-held-party-time-travellers--turned-.html#ixzz4BA7QLGqv>

SOME DARK-MATTER NUMBERS

One way of determining if dark matter belongs to a higher dimension would be to measure its gravitational effects in space dimensions (see "A Brief History of Time" by Stephen Hawking – Bantam Press 1988, pp. 164-165). In three dimensions, the gravitational force drops to 1/4 if one doubles the distance. In four dimensions (4th-dimensional hyperspace), it would drop to 1/8 and in five dimensions (5th-dimensional hyperspace) to

1/16. With more than three space dimensions, the electrical forces that cause electrons to orbit round the nucleus of an atom would behave in the same way as gravitational forces. The electrons would either escape from the atom or spiral into its nucleus. In either case, atoms as we know them could not exist – and there would only be subatomic particles in hyperspace. However, it seems that this limitation can be overcome. To be consistent, hyperspace and hypertime must form a union as surely as the space and time we're familiar with are united into science's accepted space-time. If the universe is a Cosmic Unification, a spacecraft or computer (many, many atoms) is not restricted to the hyperspace-hypertime union but can use hypertime eg imaginary time while using "real" space. Now using only 3 space dimensions, electrical forces don't behave like gravitational forces and atoms do exist. What about "a spaceship using imaginary time and imaginary space might encounter no distances in space nor any intervals of time. It'd exist in a cosmic unification and would be everywhere in space and time at once." (3rd last paragraph of "Complex Number Plane") Would the presence of extra space dimensions mean atoms can't exist? It seems that the ship and its contents can no longer be a separate assembly of atoms making up part of the universe. An interpretation is that they'd actually be the universe.

How can electrical force behave in the same way as gravitational force in extra space dimensions? 1) The strength has to be reduced a trillion trillion trillion times because an electromagnetic wave is 10^{36} times more powerful than a gravitational wave. Referring to the diagram in **COMPLEX NUMBER PLANE** – when an electric wave is diverted from the x-axis to the y-axis representing the 4th spatial dimension, there is no wave motion in real time. This means there can be no amplitude or frequency except at the point marked 0, and the electric wave has lost virtually all power, 2) Having lost its nature, the electric wave is now a gravitational wave (has reverted to the waveform it possessed prior to the split by quantum gravitational lensing – 2nd last paragraph of **GRAVITY***). It becomes a gravitational wave because gravitation is the most fundamental force in the cosmos, composing its entirety. All other forces, and mass, result from it: time is the result of the motions of entangled forces and mass, making all space-time entangled.

*Maybe the gravitational force is split into the other 3 forces by means of quantum gravitational lensing, whose non-subatomic-scale counterpart can split the image of an astronomical object into several images.

The positive direction on the x-axis (representing the 3 space dimensions of real space-time) is in continuous contact with the negative direction on x (the 5 space dimensions of complex space-time). Therefore, real gravity is perpetually amplified by complex gravity. Using Professor Hawking's figures from the previous paragraph, the amplification equals $\frac{1}{4} \times \frac{1}{4}$ ie doubling the distance in 5 space dimensions causes gravity to become 1/16 as

powerful. It is not $\frac{1}{4} \times -\frac{1}{4}$ since numbers have the same property regardless of direction on the Complex Number Plane (they increase in value). To conserve this sameness, the second one must be $+\frac{1}{4}$ if the first one is $+\frac{1}{4}$. Alternatively, the gravity's strength is reduced 4 times and this number is multiplied by another 4 to reduce it 16 times overall. In the 4 space dimensions represented by the imaginary axis, this y-axis is half the distance (90 degrees) from the real x-axis that the complex x-axis is (it's removed 180 degrees). So gravitational weakening from doubling distance in 4 space dimensions = (reduction of 4 times multiplied by another reduction of 4 times) / 2, for an overall reduction of 8 times to a strength of 1/8. Visualize the diagram in "Complex Number Plane" as a 3-D horizontally-oriented crystal block interlocking with a vertical block of equal volume. Then "sideways" time is not separate from, but unified with, the x and y axes. If combined with a hypothetical sideways space, it'd form a 6th dimension of space-time but it does not represent a 6th dimension because it is merely extension of space-time's axis, as well as of the imaginary and complex hyper-spacetimes. Only 5 space dimensions can exist – along with real time, imaginary time and complex time.

UNIVERSAL EXPANSION

A) EXPANSION RELATED TO THE UNIVERSE AS A WHOLE

In "Gravity" I voiced doubts about the traditional Big Bang and traditional Cosmic Inflation, speaking of their microwave background and gravity-wave background being explicable by re-radiation of gravitational waves. It appears undeniable (to me) that a) the Big Bang theory – and Inflation – are built on the belief that only one time exists, and b) that there is more than one time (see 3 time dimensions/5 space dimensions, and Professor Itzhak Bars, in **COMPLEX NUMBER PLANE**). Therefore, it must be stated that science's understanding of the Big Bang – built on everyone believing time only exists in one version – is a basic problem, and a new understanding of it is definitely required.

The simplest, but totally uncalled for, solution is to throw the Big Bang and Inflation out the window - and return to the Steady State theory, a former rival of the Big Bang pioneered by people like Fred Hoyle, Hermann Bondi and Thomas Gold. The Big Bang seems to possess qualities that should be retained, despite its necessity to be reformed. Rather than completely rejecting every part of it, let's investigate a Steady State-Big Bang hybrid and see what happens. As astronomer Carl Sagan (1934-1996) once said, "At the heart of science is an essential balance between two seemingly contradictory attitudes— an openness to new ideas, no matter how bizarre or counterintuitive they may be, and the most ruthless skeptical scrutiny of all ideas, old and new. This is how deep truths are winnowed from deep nonsense."

—*The Demon-Haunted World: Science as a Candle in the Dark* (1997), 304. - See more at: <http://www.space.com/15994-carl-sagan.html#sthash.ZOhncmUu.dpuf>. Also, remember this sentence from the end of "Motion" - "If time was linear and always operated in a straight line, the origin of (life and the Universe) must be with God or be the result of quantum fluctuations and evolution. But since time is nonlinear, origins can be with anybody who has computers (even humanity)."

In the steady-state theory, the density of matter in the expanding universe remains unchanged due to a continuous creation of matter. The mentioned pioneers calculated that, to keep the universe in a "steady state", new matter or energy has to be continually created at a rate equal to the mass of one hydrogen atom in each quart of space every half-billion years. ("The Universe" by Life Nature Library - Time Inc. 1964, p.175). Page 176 says, "The space in which the expansion takes place is of the ordinary flat, Euclidean kind and the amount of matter in it is infinite and steadily growing more infinite. (The number of galaxies) is infinite and, of course, time is also infinite." Such a universe could be "created"[^] by the following scenario -

[^] Science's Law of Conservation has known since the 19th century that neither matter nor energy can ever be destroyed or created - they only change form. This Law constitutes a major objection to the Steady State theory by scientists but the term "creation" does not have to be interpreted literally. It can be nothing more than a convenient word that springs to mind. Creation might actually mean rearrangement of energy and matter.

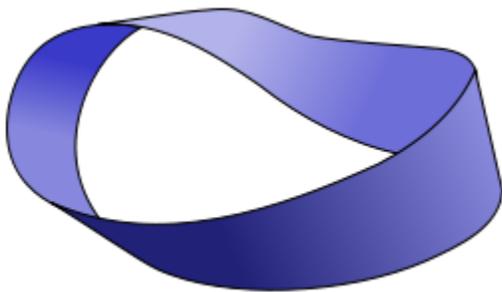
The beginning of a Steady State Universe draws on mathematics' topology, or rubber-sheet geometry. The topology takes the form of electronics' binary digits (1's and 0's) composing 2 Möbius strips which are united into a figure-8 Klein bottle constituting a "sub"universe. The encoding of infinitely-long irrational and transcendental numbers like pi, e, $\sqrt{2}$ by the digits produces an infinite series of sub-universes (an infinite universe)*. And other subs can naturally affect our own 13.8 billion-year-old subcosmos. ("Our Mathematical Universe" by cosmologist Max Tegmark – Random House/Knopf, January 2014 believes the universe has a mathematical foundation).

* For what I see as potential support for this maths, I thank "The origins of space and time" by Zeeya Merali ("Nature" 500, 516–519: 28 August 2013) which supplied the info that Rafael Sorkin - a physicist at the Perimeter Institute in Waterloo, Canada - postulates that the building blocks of space-time are simple mathematical points that are connected by links. He calls his theory Causal Sets.

Binary digits are proposed to be the Hidden Variables which "are an interpretation of quantum mechanics based on the belief that the theory is incomplete and that there is an underlying layer of reality that contains additional information about the quantum world. This extra information is in the form of the hidden variables, unseen but real quantities. The identification of these hidden variables would lead to exact predictions for the outcomes of measurements and not just probabilities of obtaining certain results." ("Quantum" by Manjit Kumar - Icon Books, 2008 - p. 379)

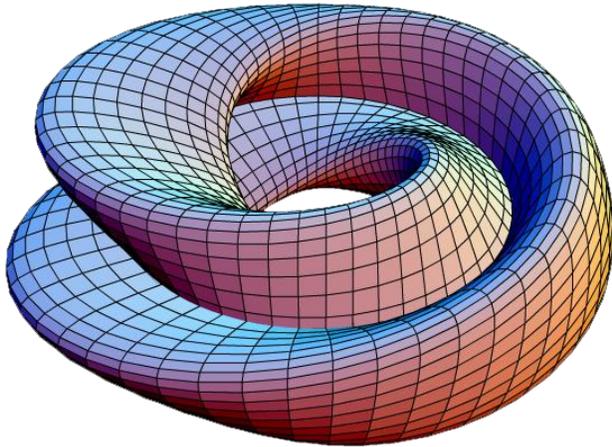
String theory – the best known hypothesis of modern physics searching for the universe's Theory of Everything - says everything's composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents (p. 84 of "Workings of the Universe" by Time-Life Books, 1991). We can visualize the tiny, one dimensional, so-called Virtual Particles that fill all space and are really pulses of energy. We can visualize them generating binary digits of 1 and 0 (base 2 mathematics) that form currents in a two-dimensional program called a Mobius loop – or in 2 Mobius loops, clockwise currents in one loop combining with counterclockwise currents in the other to form a standing current. (The curving of what we call space-time sounds very strange, but I think it can actually be explained by modelling space-time's construction on the Mobius strip that can be represented by giving a strip of paper a half-twist of 180 degrees before joining its ends.)

Mobius Loop (source: http://www.polyvore.com/mobius_strip_public_domain_clip/thing?id=72360021)



Joining two Mobius strips (or Mobius bands) forms a four-dimensional Klein bottle (<http://plus.maths.org/content/os/issue26/features/mathart/index>)

Figure-8 Klein Bottle (source: <http://commons.wikimedia.org/wiki/File:KleinBottleFigure8-01.png>)



And each Klein bottle can become an observable (or "sub") universe: figure-8 Klein bottles resemble spiral galaxies, and appear to have the most suitable shape to form subuniverses. This connection of the 2 Möbius strips can be made with the infinitely long irrational and transcendental numbers. Such an infinite connection translates into an infinite number of TANGIBLE figure-8 Klein bottles which are subuniverses. They're tangible because the numbers result from the virtual particles making up the universal G-EM (Gravitational-ElectroMagnetic) field. And the gravitons also help compose matter. The infinite numbers make the cosmos as a whole* physically infinite, the union of space and time makes it eternal, and it's in a static or steady state because it's already infinite.

* That is: the cosmos beyond our 13.8-billion-year-old subuniverse, which is apparently expanding from the energy of virtual particles becoming spacetime or matter, and displacing parts of the universe beyond.

For the note below on the figure-8 Klein bottle, I refer to – a) Bourbaki, Nicolas (2005). Lie Groups and Lie Algebras. Springer b) Conway, John (1986). Functions of One Complex Variable I. Springer c) Gamelin, Theodore (January 2001). Complex Analysis. Springer d) Joshi, Kapli (August 1983). Introduction to General Topology. New Age Publishers e) Spanier, Edwin (December 1994). Algebraic Topology. Springer

Informally - if an object in space consists of one piece and does not have any "holes" that pass all the way through it, it is called simply-connected. A doughnut (and the figure-8 Klein bottle it resembles) is "holey" and not simply connected (it's multiply connected). The universe appears to be infinite (more info in "Infinite Universe" by Bob Berman - "Astronomy", Nov. 2012), being flat on the largest scales and curved on local scales (from far away, a scene on Earth can appear flat, yet the curves of hills become apparent up

close). A flat universe that is also simply connected implies an infinite universe [Luminet, Jean-Pierre; Lachi`eze-Rey, Marc - "Cosmic Topology" - Physics Reports 254 (3): 135–214 (1995) [arXiv:gr-qc/9605010](https://arxiv.org/abs/gr-qc/9605010)]. So it seems the infinite universe cannot be composed of subunits called figure-8 Klein bottles (flat universes that are finite in extent include the torus and Klein bottle).

But gaps in, or irregularities between, subuniverses shaped like figure-8 Klein bottles are "filled in" by binary digits in the same way that computer drawings can extrapolate a small patch of blue sky to make a sky that's blue from horizon to horizon. This makes space-time relatively smooth and continuous - and gets rid of holes, making these types of Klein subunits feasible. The Klein bottle is a closed surface with no distinction between inside and outside. There cannot be other universes outside our infinite and eternal universe – there's only one cosmos.

A thought-provoking statement by Life Nature Library is that "... the amount of matter in (the Universe's space) is infinite and steadily growing more infinite." *This relates to a statement by "mathsmanretired" - a British teacher with a B.A. in mathematics and M.Sc. in mathematical education – in "Can you add to infinity?" at <https://answers.yahoo.com/question/index?qid=20090106024304AA1Rv5q>. He said, "... infinity is a concept, not a number. Therefore the process of addition is undefined in this situation. You cannot treat infinity as if it were just a number." Adapted to the present discussion, this can mean an infinite number of subuniverses can be added to the already-infinite universe-as-a-whole during the past, present and future. Their addition merely involves numbers - it never increases the universe's size beyond the infinite. This brings to mind the work of German mathematician Georg Cantor (1845-1918) who wrote about an infinity of infinities, with one infinity being larger than another. He rejected the idea of an absolute infinity which would, to paraphrase mathsmanretired, treat infinity as if it were just a number (the number associated with an absolute infinity would be 1).

A reasonable objection to the "infinity of infinities" concept is that a smaller infinity is limited in size compared to a larger one. The idea of limits to infinity - which is an idea of limitlessness - is a contradiction. In the case of the universe and its subuniverses, think of the matter and energy composing them. The cosmos could be one absolute infinity of energy going on and on forever both in space and time. Sometimes the gravitational energy and electromagnetic energy interact (perhaps because of temperature) to form matter. Sometimes the energies don't interact, possibly forming black holes. In these ways, infinity's energy content is absolute but its content of matter and mass can vary and allow an "infinity of infinities". Such a proposal conforms to the Law of Conservation which says neither matter nor energy can ever be created or destroyed - they only change form, including into each other - and the total energy/mass content of the cosmos is constant.

B) EXPANSION RELATED TO THE OBSERVABLE (OR SUB-) UNIVERSE

The last paragraph of "Gravity" says, "Gravity's a push and the reverse motion of complex gravity causes complex gravity to act in the reverse manner - as a pull. In real space-time, the Sun lies in a depression or valley, and the Earth rolls towards it. But in complex space-time, the Sun instead sits on a high hill, and Earth rolls away from it." So the push of gravity would cause expansion of the observable universe while the pull of complex gravity would cause contraction. In the universe as a whole (the infinite one), this expansion and contraction precisely cancels. In our observable sub-universe, there is approximately 5 times as much dark matter as regular:

"Planck Mission Brings Universe Into Sharp Focus": http://www.nasa.gov/mission_pages/planck/news/planck20130321.html#.V1zEQ49OJjp. As stated in "Dark Energy, Dark Matter and Time-Travel Parties", dark matter may be made by complex gravity (Einstein's advanced gravitational waves that travel backwards in time). If normal gravity combines with electromagnetism to make matter, dark matter's production would be in association with complex electromagnetism (Maxwell's advanced electromagnetic waves going back in time).

The increased amount of dark matter makes it 5 times harder to move all of the dark matter than all of the normal variety. Its resistance to inertia is 5 times more. And resistance to change of motion is 5 times more for its cause (complex gravity), too. The end result is that space-time resists the contraction which complex gravity is responsible for, and expansion is much more likely to occur. Addition of energy or mass to our subuniverse equals addition of resistance to motion by its **complex space-time** component, and addition of relative freedom of movement by its **real space-time** part. This increases the rate of expansion ("Nobel physics prize honours accelerating Universe find" by Jason Palmer - Science and technology reporter, BBC News, 4 October 2011 - <http://www.bbc.com/news/science-environment-15165371>) through introduction of extra spacetime/virtual particles/mass which displaces spacetime/virtual particles/mass previously occupying that spot.

The problem is that our observable universe becomes fundamentally different from the larger universe it's part of. This violates the Copernican ideal – which makes man's view as typical and ordinary throughout the course of time as it is throughout the extent of space. Maybe our little corner of space-time really is basically different from the rest of space-time (or at least of particular portions of it). But maybe there are errors with calculations of the alleged rate of expansion, and/or of the distribution of dark matter.

Bits (binary digits) can potentially go far beyond unification of many pixels into one image. They could unify everything in space and in time into one entity and one event. This offers an explanation for the quantum entanglement of particles over light years, and might even challenge inflation's idea that the uniformity in the cosmos means particles in the universe must have once been in physical contact. Such entanglement is surely linked to the superposition of 1's and 0's into the universe's qubit aka singularity. Is this qubit/singularity formed by **COMPLEX NUMBER PLANE's** spaceship that uses imaginary time plus imaginary space, and exists in a cosmic unification to be everywhere in space and time at once. That's a method of "programming" the 1's and 0's composing all the gravitons (and photons too) ... to attract and exist as a quantum-superposed qubit.

Rather than having access to everything in the universe severely restricted and only being able to see and touch objects that are relatively close in space and time, access to every bit of the infinite and eternal universe at once becomes possible. Today, you and I are usually limited to seeing the surfaces of things and being able to move our own bodies or objects we touch. Tomorrow, it's possible we can look at the inside or outside of anything, and manipulate external objects as easily as our own bodies. These things and so much more may be parts of everyday life, for there would literally be no limits if we gain access to all infinity and eternity. ***This ability must only come to fruition in a future, ideal society: it would only be wasted and abused in the present warring and selfish world!***

Instead of the uncertainties surrounding the material expansion in the Big Bang and Inflation, a new type of expansion emerges: away from the limits in size and other measurements necessarily associated with inflation and the big bang, and into eternal infinity – what Dr. Richard Bucke calls Cosmic Consciousness ("***Cosmic Consciousness: A Study in the Evolution of the Human Mind***" by Richard Maurice Bucke M.D. - first published 1901 by Innes & Sons, published by E. P. Dutton & Co. Inc. 1969 - https://en.wikipedia.org/wiki/Cosmic_Consciousness).
