

Title –

Ppc GhEEm_s

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Abstract –

This article is called Ppc GhEEm_s because it combines the P(oincare conjecture) + p(=mv) + c(=∞) + G(ravitational constant) + h (Planck's constant) + E(=hv) + E(=mc²) + m_s (spin quantum number). If you start with a stutter and progress to the Dutch pronunciation of "ee" as "ay" in "say", the article might be called "P-peace Games" ☺ My aims are to show - a new way of looking at relativistic mass increase and time dilation, infinity has 2 definitions (space-time going on and on forever; and the elimination of all distance), this elimination of distance unites here and there (entanglement) plus past and future (retrocausality) plus quantum mechanics and general relativity (theory of everything), the relation between E=hv and E=mc², h and G both apply to mass and to space-time, the warping of space in Einstein's General Relativity was extended by him to subatomic particles, electromagnetism and the nuclear forces may be regarded as modifications of gravitation because all forces are formulated from the same mathematical foundation of the universe, this math basis derives from human development of hidden variables called binary digits and figure-8 Klein bottles (which form the subuniverses - including ours - in the one infinite universe), our remote descendents travel to the distant past via a 5th-dimensional hyperspace and apply this maths which has been glimpsed by string theory to produce the Big Bang, the inverse-square's infinite aspect combines with eternal cosmic entanglement to produce infinity's 2nd definition (simultaneously, a universal intelligence we call God inevitably exists forever), parallel universes require infinitesimal separation and can't exist because of infinity's zero-separation definition, and I suspect Planck could have developed E=mc² if Einstein had been born a decade later.

Content -

In physics, the letter v can stand for 2 things. It can mean "velocity" (as in p=mv, momentum p is the product of mass m and velocity v). It can also mean frequency of radiation (as in E=hv, the energy associated with a quantum of radiant energy is measured by multiplying Planck's constant h by the frequency of the radiation v).

Albert Einstein told us that E=mc² (the energy associated with a quantum of radiant energy equals mass times light's velocity squared). Since E=hv, v is associated with c (the frequency of the radiation is that of light). The letter h is therefore associated with mass m. If Einstein was correct to square c, h would be associated with m².

Planck's constant h is not restricted to mass but is a universal constant, just like Isaac Newton's gravitational constant G is universal and operates throughout the cosmos. So how does Max Planck's h operate throughout the cosmos? I see no reason to limit either h or G to merely a part of the cosmos (mass). Why not take the word "universal" literally and apply both letters to the entire cosmos i.e. not only to mass, but also to space-time? This is not unprecedented, for Einstein did this when his Theory of Relativity concluded that gravitation (G) is the curvature and warping of space-time and then extended this warping to subatomic particles in his 1919 paper "Do Gravitational Fields Play An Essential Part In The Structure Of The Elementary Particles Of Matter?"

Planck's constant h has been connected with mass here, and is already connected with the subatomic scale. It can be connected with space-time by hypothesizing that the quantum world, the masses observable in everyday life, and space itself are all composed of the same thing at the tiniest scale –

Why did I use the word "space" instead of "space-time" in the preceding sentence? It's impossible to point to the 4th dimension of time, so this cannot be physical. Since the union of space-time is well established in modern science, we can assume the 4th dimension is actually measurement of the motions of the particles occurring in the 3 dimensions of length, width, and height ^[0]. And how is space composed of the same thing as quantum particles, everyday objects and astronomical objects? 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 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 and the nuclear forces. Therefore, space-time is unified with the gravitational fields - whose warps extend from General Relativity to the ultimate composition of quantum, human and cosmic scales. (Space-time is similarly unified with the other component of particles [according to Einstein's 1919 paper to the Prussian Academy of Sciences] viz. electromagnetic fields, which are derived from the same mathematical source [see below] and may therefore be called modified gravitation.) A unification of scales suggests the existence of a universe subject to the laws of fractal geometry (a fractal is a shape such that, if you look at a small piece of the shape, then it looks the same as the original, just on a smaller scale – it is used to describe coastlines, mountain ranges, etc). This mathematical approach to the universe will be explored further. ^[1]

[0] The basic standard of time in the universe is the measurement of the motions of photons i.e. of the speed of light. This is comparable to the 1960's adoption on Earth of the measurement of time as the vibration rate of cesium atoms. At lightspeed, time = 0 (it is stopped). Below 300,000 km/sec, acceleration or gravitation causes time dilation (slowing of time as the speed of light is approached). If time's 0, space is also 0 because space and time coexist as space-time whose warping (gravity) is necessarily 0 too. Spacetime/gravity form matter/mass, so the latter pair can't exist at lightspeed and photons are massless (even when not at rest). Mass increase at increasing accelerations is inevitable because the object is encountering more spacetime and gravity (the producers of mass). But mass increase cannot become infinitely large since mass doesn't exist at lightspeed. The object is converted into energy which means mass and energy must be equivalent and Energy must equal Mass related to the Speed of Light ($E=mc^2$, in the words of Albert Einstein).

[0.1] The former pair (spacetime/gravity) also lose existence at the speed of light. Since the universe is based on mathematics (see below), it's possible to progress in number-line fashion from the **positive** acceleration in space-time to the state of **zero** spacetime at lightspeed ... and go beyond that to **negative** 5th-dimensional hyperspace described by imaginary numbers (various interpretations of Einstein's theories have suggested superluminal velocity permits time travel). We couldn't reach this hyperspace by travelling faster-than-light because we would have turned into energy – and no energy can exceed light's speed. But we can access hyperspace at subluminal speeds by “inverting” space.^[4] Since there is zero, or no, spacetime at light speed; all distances – between here and there, past and future, quantum mechanics and general relativity – are totally eliminated (a photon experiences the whole universe – and all time – in its existence). The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation partly depends on the distance between the centres of objects, the distance of separation between particles or objects only goes to zero when those centres occupy the same space-time coordinates (not merely when the objects' sides are touching i.e. infinity equals the total elimination of distance – the infinite cosmos could possess this absence of distance in space and time, via the electronic mechanism of binary digits). So infinity exists at light speed. In “Physics of the Impossible” by Michio Kaku (Penguin Books 2008, p.227), it is stated “.. whenever we naively try to marry these two theories (general relativity and quantum theory), the resulting theory makes no sense: it yields a series of infinite answers that are meaningless.” We see, by ^[0] and ^[0.1], that infinite answers are supposed to be arrived at because “infinity (in the sense of total elimination of distance) exists at light speed”. Infinity and infinite answers are not barriers to uniting general relativity and quantum theory. When we realize that $c=\infty$ (infinity exists at light speed), those infinite answers can yield not nonsense but real meaning – renormalization that cancels infinities is definitely not wanted.

[1] A few ideas can be borrowed from string theory's ideas of everything being

ultimately composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents in a four-dimensional looped superstring. We can visualize tiny, one dimensional binary digits of 1 and 0 (base 2 mathematics) forming currents in a 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 ^[2]. Combination of the 2 loops' currents requires connection of the two as a four-dimensional Klein bottle whose construction from binary digits would make it malleable and flexible, deleting any gap and molding its border to perfectly fit surrounding subuniverses. ^[3] This Klein bottle could possibly be a figure-8 Klein bottle because its similarities to a doughnut's shape describes an idea suggested by mathematics' "Poincare conjecture". The conjecture has implications for the universe's shape and says you cannot transform a doughnut shape into a sphere without ripping it. One interpretation follows: This can be viewed as subuniverses shaped like Figure-8 Klein Bottles gaining rips called wormholes when extended into the spherical spacetime that goes on forever (forming one infinite superuniverse which is often called the multiverse when subuniverses - which share the same set of physics' laws - are incorrectly called parallel universes which are wrongly claimed to each possess different laws). Picture hyperspace projecting binary digits to spacetime which exists on the surface of this doughnut which has rips in it. These rips provide shortcuts between points in space and time – and belong in the 5th-dimensional hyperspace. As we'll see very soon, hyperspace is not confined to one particular location – so wormholes are to be found within space-time.

^[2] The orientation of a Mobius (relative positions of 2 Mobius loops) determines the many combinations of fractions, negativeness, neutrality or positivity of mass, charge and spin. The combinations are finite because the two-dimensional Mobius programs from which fermions and bosons originate, plus each four-dimensional Klein bottle which manifests and expresses the particles, are themselves limited and finite. This brings completion to my article's title by showing how quantum spin, which cannot be explained in terms of classical rotation, can only have certain values (these are equal to either a whole number or half a whole number multiplied by Planck's constant h divided by 2π , a quantity called \hbar).

^[3] Currents in the two 2-dimensional programs called Mobius loops are connected into a four-dimensional figure-8 Klein bottle by the infinitely-long irrational and transcendental numbers. Such an infinite connection translates - via bosons being ultimately composed of 1's and 0's depicting π , e , $\sqrt{2}$ etc.; and fermions being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of Figure-8 Klein bottles. As Bob Berman's article "Infinite Universe" ("Astronomy" – Nov. 2012) wrote, "The evidence keeps flooding in. It now truly appears that the universe is infinite" and "Many separate areas of investigation – like baryon acoustic oscillations (sound waves propagating through the denser early universe), the way type 1a supernovae compare with redshift, the Hubble constant, studies of cosmic large-scale

structure, and the flat topology of space – all point the same way.”

"Monthly Notices of the Royal Astronomical Society" reports that the WiggleZ galaxy survey confirms that matter is distributed evenly at the largest scales. But if we disregard the largest scale of infinite flatness; smaller scales reflect the idea of fractals e.g. from roughly spherical galaxy clusters, down to stars, down to atoms.

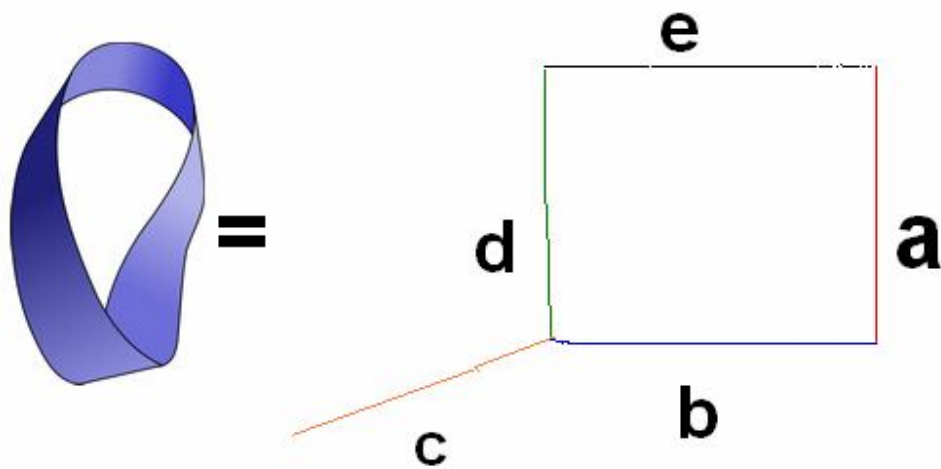
(after examining recent measurements by the Wilkinson Microwave Anisotropy Probe, NASA declared "We now know that the universe is flat with only a 0.4% margin of error." - http://map.gsfc.nasa.gov/universe/uni_shape.html; and according to "The Early Universe and the Cosmic Microwave Background: Theory and Observations" by Norma G. Sánchez, Yuri N. Parijskij (published by Springer, 31/12/2003), the shape of the Universe found to best fit observational data is the infinite flat model).

[3.1] God's existence cannot possibly be scientifically comprehended in the current non-unified understanding of the cosmos. Thus, many scientists need to invoke the existence of an unlimited number of parallel universes having limitless combinations of the laws of physics (so one of those universes would produce all the correct laws that enable beings such as ourselves to exist). However, BITS (Binary digITS) only suggest existence of the divine if time is linear. A non-supernatural God is proposed via the inverse-square law coupled with eternal quantum entanglement, but Einstein taught us that time is warped. Warped time is nonlinear, making it at least possible that the BITS composing space-time and all particles originate from the computer science of humans. The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation partly depends on the distance between the centres of objects, the distance of separation between objects only goes to zero when those centres occupy the same space-time coordinates (not merely when the objects' sides are touching i.e. infinity equals the total elimination of distance – the infinite cosmos could possess this absence of distance in space and time, via the electronic mechanism of binary digits). Zero separation is the case in quantum-entangled space-time and physicist Michio Kaku says in his book "Physics of the Impossible" that modern science thinks the whole universe has been quantum-entangled forever. This means there's still room for the infinity known as God. God would be a suprapantheistic union of the universe's spatial, temporal, hyperspatial, material and conscious parts; forming a union with humans in a cosmic unification, and a universal intelligence. Science's own Law of Conservation says the total mass (or matter) and energy in the universe does not change, though the quantity of each varies (I interpret this Law as saying – to get matter and energy, you have to start with matter and energy; which means that time must be warped). So what happens if we subtract humans of the distant future - with their ability to travel into the past and use incomprehensibly-advanced cosmogenesis, terraforming and biotechnology (cosmos, Earth-like planet, and life-generating abilities) from the origins of life? It becomes impossible for inorganic materials – and referring to the creation of amino acids

in the laboratory by Harold Urey and Stanley Miller in 1952, relatively simple amino acids - to be assembled into complex plants and animals, whose adaptations are often called evolution.

[4] "Hidden variables" is an interpretation of quantum mechanics which is based on belief that the theory is incomplete (Albert Einstein is the most famous proponent of hidden variables) and it says there is an underlying reality with additional information of the quantum world. I suggest this underlying reality is binary digits generated in 5D hyperspace. These allow time travel by making it possible to warp space (wormholes being one example of doing this) simultaneously adding precision and flexibility to the elimination of distances; and the "fitting together" of subuniverses to form a continuous superuniverse. (The boundaries where subuniverses meet might be called Cosmic Strings - similar to cracks that form as water freezes into ice and analogous to "cracks" in spacetime formed as subuniverses cool from their respective Big Bangs - and first contemplated by the theoretical physicist Tom Kibble in the 1970s.)

Maybe hidden variables called binary digits could permit time travel into the future by warping positive space-time. And maybe they'd allow time travel into the past by warping a 5D hyperspace that is translated 180 degrees to space-time, and could be labelled as negative or inverted. (The space-time we live in is described by ordinary [or "real"] numbers which, when multiplied by themselves, result in positive numbers e.g. $2 \times 2 = 4$, and -2×-2 also equals 4. Inverted "positive" space-time becomes negative hyperspace which is described by so-called imaginary numbers that give negative results when multiplied by themselves e.g. i multiplied by itself gives -1 . The past can never be changed from what occurred, and the future can never be altered from what it will be. Both are programmed by the 1's and 0's.



Width a is perpendicular to the length (b or e) which is perpendicular to height c . How can a line be drawn perpendicular to c without retracing b 's path? By positioning it at d , which is then parallel to (or, it could be said, at 180 degrees to) a . d (the spaceship) is already at 90 degrees to length b and height c . To be at right angles to length, width and height simultaneously (the state equivalent to time travel); it has to also be perpendicular to (not parallel to) a . This is accomplished by a twist, like on the right side of the Möbius loop pictured above, existing in a . Then part of a is indeed at 180 degrees to d , but part of a is at 90 degrees to d . This situation requires a little flexibility or "fuzziness" which allows the numbers to deviate slightly from their precise values of 90 and 180. The fuzziness is represented in nature by past, present, future, space, time, and hyperspace existing everywhere rather than being confined to particular locations. Thus, $90+90$ (the degrees between b & c added to the degrees between c & d) can equal 180, making a & d parallel. But $90+90$ can also equal 90, making a & d perpendicular. (Saying $90+90=90$ sounds ridiculous but it has similarities to the Matrix [of mathematics, not the action-science fiction movie] which is an array of numbers placed in rows and columns. It was worked out in the mid-nineteenth century by British mathematician Arthur Cayley, matrix mechanics is a version of quantum mechanics discovered by Werner Heisenberg in 1925, and matrices say X multiplied by Y does not always equal Y times X . In this paragraph, the first 90 plus the second 90 does not always equal the second 90 plus the first 90 because $90+90$ can equal either 180 or 90.) If the universe is composed of an infinite number of subuniverses shaped like two 2-D Möbius loops joined to form a 4-D figure-8 Klein bottle, in each subuniverse there would be 2 perpendicularities to

the twist (one lot of 90+90, then another 90+90). 180+180 could equal 360 – represented in physics as a subuniverse, galaxy, black hole, subatomic particle (or a spherical wave that spreads to its destination instantly, translating space by 90 degrees i.e. producing quantum entanglement). 180+180 could also equal 180 – represented in physics by two spherical waves instantly arriving from opposite directions and their simultaneous quantum entanglement producing inversion of space (translation by 180 degrees). Just as d and a can simultaneously be 180 or 90 degrees apart; this makes length, width and height simultaneously perpendicular; and makes travel into the past possible, by attaining the infinity which is the elimination of distance and instantly traveling to points that might be negative billions of light years away, or even more). Negative distances make no sense in the everyday life we know but they make perfect sense in a mathematical universe – and they permit the spaceship to enter hyperspace and journey into the past.

PS Since v stands for both “velocity” and “frequency of radiation”, it implies that mass and energy are related. And indeed they are, according to Einstein. I believe Max Planck should be given more credit for his insights. He developed $E=hv$ some 5 years before Albert Einstein formulated $E=mc^2$. Given the relation of these equations in the 2nd paragraph, I suspect Planck could have developed $E=mc^2$ if Einstein had been born a decade later.