



Opinions

Alternative to Big Bang Requires Seemingly Impossible Physics

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Is there a reasonable alternative to the theory of the expanding universe? The idea of an eternal universe is highly speculative and doesn't quite fit with our current understanding of the universe's origins, such as the Big Bang theory. Any idea that has been around for a century cannot be easily dismissed but the James Webb Space Telescope is casting potential doubts on the Big Bang. If this continues, we may well find ourselves in need of another theory explaining cosmic origins. This submission begins with the “advanced” waves that aren't scientifically popular because they travel back in time and seem to violate the laws of cause and effect. However, the Nobel-winning physicist Richard Feynman loved them and used them to explain antimatter. And this submission will propose that all time in the past, present, and future is united into one thing and causality need not be considered a problem. It then uses readshift, aka re(tarded)-ad(vanced) shift, to suggest the universe is static and supports that conclusion by a revision of electromagnetism which, thanks to George Yuri Rainich, includes gravitation. This is followed by an alternative to the Big Bang where, seemingly impossibly, the infinite and eternal universe is created using pi, imaginary time, virtual reality, augmented reality, quantum and macroscopic entanglement. Finally, to better explain the unification of everything in time and space, is a shortened section on what is called vector-tensor-scalar geometry which talks about the Higgs boson/field and was inspired by a 1919 paper published by Albert Einstein.

When we solve 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 [1]. Einstein's equations say gravitational fields carry enough information about electromagnetism to allow Maxwell's equations to be restated in terms of these gravitational fields. This was discovered by the mathematical physicist George Yuri Rainich [2]. George Yuri Rainich's

The farther away a star or galaxy is, the more the advanced part of waves from it will reach into the past, giving us a greater inaccuracy regarding its true distance. This increase is analogous to redshift increasing with distance. We might call it “readshift” - re(tarded) ad(vanced) shift. “Readshift” would explain the astronomical results which were interpreted as accelerating expansion of the universe. Surveyed supernovas would appear fainter, therefore apparently farther away than they truly are. Unless advanced waves are considered a possibility, the only rational way to move a supernova from its apparent, distant position to its true nearer location is to conclude the universe has expanded.

A backup to this point of view is presented in a fresh perspective on the nature of electromagnetism. The perspective uses John Wheeler's geons [3] and confines James Clerk Maxwell's propagation of electromagnetic waves by oscillating electric and magnetic fields to a quantum-scale role. The confinement restricts the motion of photons – and via George Yuri Rainich, gravitons – to a “bobbing up and down” in the cosmic sea which is perpendicular to the direction of waves' propagation. The severely limited movements of gravity (space-time) and electromagnetism mean the universe never expands or contracts.

Surely an alternative to the Big Bang in which there's no expansion or contraction (no oscillation in either space or time) must be an infinite, eternal cosmos. How is it even possible to think of creating something that has always existed? A model of the cosmos might be built that uses the infinite number pi and imaginary time, and resides in Virtual Reality (artificial, computer-generated simulation). The entanglement (quantum-mechanics style) in the simulated universe is unable to remain separate from the entanglement existing in our perceived reality because computers using so-called "imaginary time" (which is defined by numbers with the property $i^2 = -1$) remove all boundaries between the two universes. This enables them to become one Augmented Reality (known now as technology that layers computer-generated enhancements onto an existing reality but seen here as the related layering of virtual reality onto other points in time and space). The poorly named imaginary time of physics and mathematics unites with pi (both are necessary to generate a non-Big-Bang cosmos i.e. an infinite universe which, because space and time can never be separated, is eternal). This manipulation of time, space, and the universe with virtual and augmented reality might possibly be produced by the two-valued binary-digit system used in electronics traversing a wormhole, or shortcut between folds in space and time, designed by humans of the far future. The augmented reality which is layered on "other" points in space-time actually isn't transmitted to other points. Because of the quantum entanglement of every particle (massive or massless) of everything in spacetime caused by advanced and retarded waves cancelling each other, only one point ever exists. Thus, transmissions to any (apparently other) places or times wouldn't be restricted to the speed of light but can be made instantaneous by technology of the far future.

Max Tegmark, professor of physics and cosmology at the Massachusetts Institute of Technology in the USA, hypothesizes in his Mathematical Universe Hypothesis that the physical universe is not merely *described* by mathematics but *IS* mathematics [4]. The hypothesis seems to be supported by the relatively recent discipline of Information Physics [5]. Tegmark's categorization of the universe has four levels, with level 4 being altogether different equations or mathematical structures. Building on the Mathematical Universe Hypothesis, these "altogether different mathematical structures" are, in this article you're reading, proposed to be topology's two-dimensional Mobius strips that are formed by base 2 maths (the binary digits of 1 and 0). The Mobius strips are joined as pairs into figure-8 Klein bottles [6] which are mathematically immersed in the 3rd dimension. The photon (the fundamental unit of electromagnetism) and graviton (the hypothetical unit of gravitation) are created by, respectively, trillions of Mobius strips and trillions of figure-8 Klein bottles. Adapting Einstein [7], these photons and gravitons interact via Vector-Tensor-Scalar Geometry (see brief summary below) to produce a space-time united with every form of mass (in Einstein's terminology, a Unified Field). Wick Rotation is built into the Mobius strips constituting particles and its motions form what is called time (being built into the Mobius and the quantum world, Wick rotation creates the union of space-time).

Both gravitational and electromagnetic waves possess retarded and advanced components which travel forwards and backwards in time, cancelling one another and entangling all masses. Wick rotation (time) is built into the Mobius strips and figure-8 Klein bottles composing electromagnetism's photons and gravitation's gravitons. Therefore, all time (the entire past and present and future) is united into one thing just as all space and all mass are united into one thing. (If time only passed rectilinearly - from past to present to future - the idea of waves travelling back in time would make no sense at all. But if time is curvilinear - with past, present, and future interconnected - time must be able to move from future to present to past.) (Unity of past/present/future may remove the issue of non-simultaneity – in special relativity – because the timing or sequence of events being different in different frames of reference can only exist if past/present/future are separate. The concepts of cause and effect are no longer separate when all periods of time are united, and everything can happen "at once". This is similar to watching a DVD – every event on the DVD exists at once since the whole DVD exists but we're only aware of sights and sounds occurring in each tiny fraction of a second. Special Relativity's non-simultaneity would only exist when time is regarded from individual points on the DVD where we're aware of one of those tiny fractions of a second. It wouldn't exist from the frame of reference where the entire DVD is viewed).

The following method of building planets is preferred to collisions between rocks and dust in the disk because most planetary systems seem to outweigh the protoplanetary disks in which they formed, leaving astronomers to re-evaluate planet-formation theories [8].

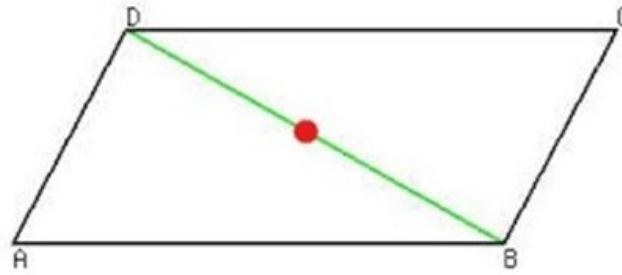


Figure 1. Parallelogram with diagonal and central scalar point. Interaction of gravitation and electromagnetism produces a momentum in gravitons and photons (and a pressure which is known as mass) [9].

A vector is a quantity which possesses both magnitude and direction. Two such quantities acting on a point may be represented by two adjoining sides of a parallelogram, so that their resultant is represented in magnitude and direction by the diagonal of the parallelogram (AD and CD, for example, can symbolize the electromagnetic and gravitational vectors ... while the resultant green diagonal of DB substitutes for the interaction of those two forces). A scalar variable is representable by a position on a line, having only magnitude e.g. the red dot on the diagonal, symbolic of the Higgs boson. A tensor is a set of functions which, when changing from one set of coordinates to another, are transformed in a precisely defined manner (e.g. changing from the coordinates of AD and CD to those of the green diagonal, or of the red dot, is a transformation performed in a particular way).

Two sides thus illustrate the graviton's spin 2 and the photon's spin 1. The resultant diagonal represents the interaction of the sides/vectors ($1+2 =$ the spin $\frac{1}{2}$ of every matter particle). Tensor calculus changes the coordinates of the sides and diagonal into the coordinates of a single (scalar) point on the diagonal. This scalar point is associated with particles of spin zero [10]. If the mass produced during the photon-graviton interaction (the energy and momentum of photons and presently hypothetical gravitons produces a pressure we call mass) happens to be $125 \text{ GeV}/c^2$,* its union with spin 0 produces the Higgs boson. $125 \text{ GeV}/c^2$ united with spin 0 means the central scalar point of the Higgs boson is related to the vector of the graviton's spin 2, and the Higgs field is therefore united with the supposedly unrelated gravitational field (together with the latter's constant interaction with the electromagnetic field). How is zero spin attained? This appears to be a consequence of matter, and the Higgs boson, both emerging from photon-graviton interaction. Two adjoining sides of a parallelogram can also represent the vectors of the photon's spin 1 and the graviton's spin 2. The resultant diagonal represents the interaction of the sides/vectors ($1+2 =$ the spin $\frac{1}{2}$ of every matter particle): and division is merely repeated subtraction e.g. 4 subtracted from 20 five times equals zero, therefore $20 \div 4 = 5$). These methods of producing quantum spin and the number zero lead to creation of the Higgs boson's spin 0.

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