

THE UNIVERSE IS LIKE A HOLLOWED SPHERE. THE WAVE CONCEPT OF TIME

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DOI: 10.7906/indecs.13.3.3
Regular article

Received: 9 April 2015.
Accepted: 23 June 2015.

ABSTRACT

There is space for new ideas of the essence and the entity of time. The article refers to our time concept as a special wave type and presents results of our investigations on this subject. Thus, time defined as waves and an energy carrier could give explanation to multiple unclear phenomena. It could explicate gravity, organization in the planetary systems and light speed limit. A hypothesis that matter exists due to time wave motion would emerge from the elementary particle mass generation by the waves. Time becomes the main driving force in the Universe. The discussed thoughts need further analyses and verification but their confirmation may mean civilization changes.

KEY WORDS

time, wave, matter, light speed

CLASSIFICATION

JEL: Z10

PACS: 01.55.+b, 04.20.Cv, 04.20. Gz, 04.30. Db

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INTRODUCTION

The issue of time has been a major subject of scientific exploration from the ancient times through philosophers' cogitation until the present day. Einstein with his theories of relativity made substantive contributions to human understanding of the nature of time. This article is based to a great extent on the transformed mass-energy equivalence law.

There exist multiple concepts of time but room for novel ideas is still opened. Encyclopaedia Britannica defines time as "a measured or measurable period, a continuum that lacks spatial dimensions. Time is of philosophical interest and is also the subject of mathematical and scientific investigation" [1].

In antiquity, time was presented in many ways. According to Heraclitus "everything flows and nothing abides" as he considered time as a cyclical continuum [2]. Zeno of Elea developed the idea that time and space are continuous and infinite and thus Achilles can never overtake the tortoise as the philosopher stated in one of his numerous paradoxes [3]. Aristotle, in turn, defined time as "the number of movement in respect of *before* and *after*" [4].

Saint Augustine believed that time and motion are associated with material time and its passage. Undoubtedly, for him God was the creator of both [5].

Newton's view of time included the idea of only one universal time as an ever uniform stream that was constant and immutable. He stated that time and space have an objective and absolute nature [6].

Bergson distinguished between two forms of time, pure time which is real duration and continuity, from mathematical time which is divisible into units [7].

Kant claimed that time and space are a priori forms of inner senses existing in the human mind which is the subjective source of them [8].

In Husserl's view, time and space were the forms which can be understood using the method of phenomenology. He perceived knowledge as the foundation for synthesis of objects in time [9].

For Leibniz, time and space were only illusions [10]. Yang proposed a quantum theory in which time is a quantum variable with a discrete spectrum, and which is nevertheless consistent with special relativity [11].

According to Tejman, energy (energetic matter), space and time are one. Wave theory introduces energetic matter – a single inflationary force – as the main creation of nature. Energetic matter creates wave formations and they, in turn, create everything [12].

In classical physics, time is an autonomous value independent of others that flows at the same rate in the entire Universe.

In Einstein's general theory of relativity, time stops being independent but is the fourth dimension of spacetime curved by gravity. Consequently, clocks at higher potentials in the gravitational field run at a different rate, time flows slower. Here, gravity is explained as a result of a "curvature" of spacetime caused by structures, accumulated matter. In the special theory of relativity, Einstein determined that the rate at which time passes depends on the speed of the reference frame where time is measured. In the case of the frames moving at speeds approaching the speed of light, significant differences in time measurements occur [13-15].

DISCOURSE

What is time in its very nature? Are we observing the consequences of time or the actions taking place in the present? How did it come into being and by what means is it spreading? In what way does energy transmit through the empty space?

We can try to find the answers in the formula $E = mc^2$, where: E – energy, m – mass, c – defined as speed of light in vacuum. This fundamental message contains a lot of information. Without motion, there is no energy, because if $c = 0$, then $E = 0$. c must be greater than 0, otherwise it would not be motion. The transformation of $m = E/c^2$ leads to the conclusion that there is no mass without energy. Motion \rightarrow Energy \rightarrow Mass. As early as in ancient Greece, Anaximander observed that motion is inherent in matter [16].

After the appropriate transformation of the formula $E = mc^2$ we obtain: $t = d\sqrt{m/E}$, where t – time, d – distance (length). In sequence: it is known that for uniform motion we use the formula for speed $v = d/t$. Since light travels in uniform motion, the considered here $v = c = d_c/t_c$, where d_c and t_c are distance and time derived from the speed of light. We can write: $c = d_c/t_c$. Let us transform the formula $c^2 = E/m$ into $(d_c/t_c)^2 = E/m$.

Quantity c^2 is always greater than 0 and mass m is positive in physical terms, which means that $E > 0$. We apply root extraction on both sides of the equation, and since E and m are greater than 0, we can omit the brackets for absolute values obtaining: $d_c/t_c = \sqrt{E/m}$. Finally, $t_c = d_c\sqrt{m/E}$. Time t measured by clocks is modified by gravity [14]. We stated, it is not identical to “pure” time, cosmic time t_c .

Quantity c^2 in the formula raises doubts and provokes some questions. Whereas the kilometre is a simple continuation of its standard, e.g. the metre, the square kilometre is a surface with an infinite number of shapes. How does the second squared change? What dimensions does $(\text{km/s})^2$ transform into? This problem can be solved by applying the same units for t_c , E , d_c and m .

Here, Anaximenes with his view on the unity of nature: “the underlying substance was one and infinite” [17] and Anaxagoras, with his “In everything there is a share of everything” [18] should be referred to.

If t is greater than 0 at present, it means *panta rhei*. $d > 0$ follows the idea of Parmenides that there is existence but no-existence is not [19]. If $m > 0$, this indicates that objects existing in time always have mass, they are not massless. If $E > 0$, this implies that currently energy exists everywhere.

In the cosmogonic aspect $t_c > 0$, $d_c > 0$, which means that neither time nor space existed before the Beginning. They manifest themselves with energy and elementary particles after the Big Bang explosion as before it the space-time was squeezed to a very small volume [20]. “All things were together” as Anaxagoras put it [18].

Critically analysing current knowledge, guided by Ancient Greek thoughts let’s assume the wave concept of time.

One of the obvious properties of time is its ability to penetrate. It runs through and crosses every boundaries.

Time considered as waves, with the appropriate conformation, could satisfy the conditions for boundless penetration of the Universe. The length of such a wave should be beyond c values that is over 300 000 kilometres and to square 90 billion km. Whereas frequency may be sought from Planck’s time to infinity.

Time defined as the waves, as the carrier of elementary energy could cause certain implications and explain many unclear phenomena.

Relations between time and energy are found at the Heisenberg’s uncertainty principle. Einstein argued that “Heisenberg’s uncertainty equation implied that the uncertainty in time was related to uncertainty in energy, the product of the two being related to Planck’s constant” [21, 22]. As early as in 1924, Louis de Broglie claimed that every particle of

velocity different from zero may be associated with a wave of defined frequency and length. Besides, he also proposed that all the material objects have a wave nature [23].

The formula $t = d\sqrt{m/E}$ (for d_c and t_c) implies that if $E = m$, then $t = d$, that is, time is equal to distance. The junction unifying time and dimensions uncovers here. At this “point-moment”, when $c = 1$, a time wave (an active factor) carrying energy generates mass to an elementary particle (a passive element). It means matter exists within and due to time motion.

Time wave \rightarrow elementary particle clusters \rightarrow matter center. As Heraclitus wrote, “Everything flows, nothing stands still. The one constant in the whole process is the law of change by which there is an order and sequence to the changes” [2]. Is this law the Formula?

Arguably, the mass-energy equivalence transformation involves χ – a Higgs boson.

It may be assumed that the time shock waves initiated after the Big Bang are composed of n-multi waves of different wave lengths and frequency that are interrelated, overlapping and looping, making strings, beams and streams. And the vacuum appears in the centre of the Space. The Universe is like hollowed sphere.

We put forward that some of the waves penetrate accumulated matter and flow forward, while others separate bounce off and create centripetally rotating loops responsible for the phenomenon of gravity. The strength of this and energetic reactions comes from continuous movement of the oncoming time waves. Time waves \rightarrow accumulated matter \rightarrow spacetime curvature \rightarrow gravity.

If not the Aether than possible it is time stream approaching from the abyss of the Universe and falling under a certain angle, that form elliptical orbits of planets. Similarly to mechanical and electromagnetic impact, the time wave beam running between Earth and Venus could cause the retro-grade rotational motion of the planets [24, 25]. Moon, which is a fragment detached from Earth, exhibits tidal locking [26, 27]. It has been an immanent part of our planet and kept tied by a specific unique gravitational force. We propose this natural satellite is held by the globe as if on ropes. The lunar mascons might make a kind of hook for terrestrial gravity [28].

What be the consequence of time and its energy reversing? We presume if time gathering elementary particles flowed in the opposite direction, it could form Black Holes. It might curl up together with space and matter till it has attained the critical point. Then the Big Bang would occur and the process would start all over again. Let us think about the possibility that Black Holes are a source of new worlds. Answering Stephen Hawking’s question – it is time that breathes fire into equations and makes the Universe for them to describe [29]. We suppose the number of dimensions might depend on amount of directions of time streams.

Why c , denoting the speed of light in a vacuum, cannot exceed 299 792 458 m/s? [30]. What are the limits? Perhaps time is the barrier, more specifically the oscillations of its waves, and the answer could be the shortest time wave-length ca. 300 000 km, with one oscillation each second. Light beam would stop for an immeasurably short period, perhaps Planck time, i.e. ca. $5,4 \cdot 10^{-44}$ s, at the oscillation “point-gate” of the time wave [30, 31]. At this point, the theory of time discontinuity is worth mentioning along with a chronon unit [32, 33]. To conclude, light travels jumping at constant velocity.

We suggest very high density of time texture, where discontinuities of the spacetime are extremely small, maybe close to the Planck length, that is the order of $1,6 \cdot 10^{-35}$ m. However, taking into account the enormous length of waves and possibilities of the current measuring instruments, the time waves remain immeasurable. Planck’s equation for the elementary particle, photon, can be written as $E = hc/\lambda$ [34]. This means that the longer wave, the lower energy. With a wavelength (λ) of 299 792 458 m, energy equals to Planck’s constant

($6,626 \cdot 10^{-34}$ J·s, we call it primal energy). We introduce a concept that the interrelation between light and time is very special. The limitation within the time loop is responsible for the masslessness of the photon.

The Universe expands and time waves could also alter their properties, so together with this metamorphosis the existence will change.

CONCLUSION

The Universe is like a hollowed sphere. Time is the main driving force in the Cosmos. The whole energy of space comes from the Big Bang and is spread and carried by time waves.

Time treated as the waves could explicate such phenomena as matter existence and gravity. Oscillations of time waves limit light speed and are responsible for masslessness of the photon. The nature of time waves makes their detection unable using the present research methods.

The results of our basic research presented in the article are to signalize the need for putting forward questions concerning the essence of time. The responses may open up a new chapter in science and lead to civilization changes. Currently, we do not influence time.

Will it ever change? Only time will tell.

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