The refutation of the Theory of Special Relativity, the demonstration of the existence of ether and the presentation of a potential Unifying Theory

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Abstract

The description of the physics of our world is at a dead end, so to move on we need to go to the root of today's theories and rethink them from the base up. As a first step, using the original data from the Michelson-Morley experiment, we demonstrate that the speed of light is not constant and related to the Earth the light spreads as in a stationary system. We prove the ether or an equivalent physical effect must exist and we demonstrate the effect of the ether on the moving systems of the Universe. We show the mistake of the Lorentz transformation and the Theory of Special Relativity and prove that time dilation could not exist based on the theory. We present the author's Hypothesis of the Dual Element Universe, which corresponds to a Unifying Theory, and on the basis of this we determine the ethereal structure of space and the real cause of time dilation. Finally, we present the experiments that can prove our statements.

Introduction

The author is convinced that the explanation of physical phenomena based on relativistic and quantum- physics cannot be correct. That is why the author created the Dual Element Universe[1] hypothesis (Chapter VIII), in which it integrates physical phenomena into a unified system. The hypothesis is consistent with empirical facts, but contradicts the explanations of relativistic and quantum physics. Therefore, in this paper we first show that the speed of light is not invariant, it is isotropic at one point in space and related to the Earth spreads as in a stationary system. We deduce that ether must exist and every object have own ether-space which moving with them. We prove that the Theory of Special Relativity[2] cannot explain the dilatation of time. We briefly present the essence of the Dual-Element Universe hypothesis, explain the reason for the dilatation of time based on the hypothesis, and outline the experiments by which our statements can be proved or refuted.

I. The Theory of Special Relativity

The Theory of Special Relativity forms a virtual mathematical space for the study of the relationship between moving systems and in this deduces that the degree of distance and time in a moving and stationary system are different.

The theory is based on two basic assumptions:
1. The laws of physics are the same in all inertia systems.
2. Light propagates in a vacuum always at a specified V speed independent of the motion of the light-emitting object.
Based on the two Axioms, he concludes that the systems are equivalent, no distinction can be made between them experimentally, and the light in them is always measured the same c velocity.

To decide the correctness of the theory, we need to determine the Axioms and the statements based on them are correct or not in the physical environment.

II. The space

Let us first define what we can mean by the concept of space. Two cases are possible:
One is that space itself is empty, filled with matter, in partial or in fully, and the physical processes take place in that matter. (Ether Theory[3]) The Dual Element Universe builds on this assumption.
The other is that empty space does not exist, space itself is a structure that can be affected by mass and energy

[1] Cseik, L. (2021, August 2). Dual Element Universe. DuElUn. Retrieved December 19, 2021, https://www.duelun.com/documents

[2] Einstein, A. (1905), "Zur Elektrodynamik bewegter Körper", Annalen der Physik 322 (10): 891–921

[3] Wikipedia. "Aether (classical element)". Retrieved December 19, 2021, https://en.wikipedia.org/wiki/Aether_(classical_element)

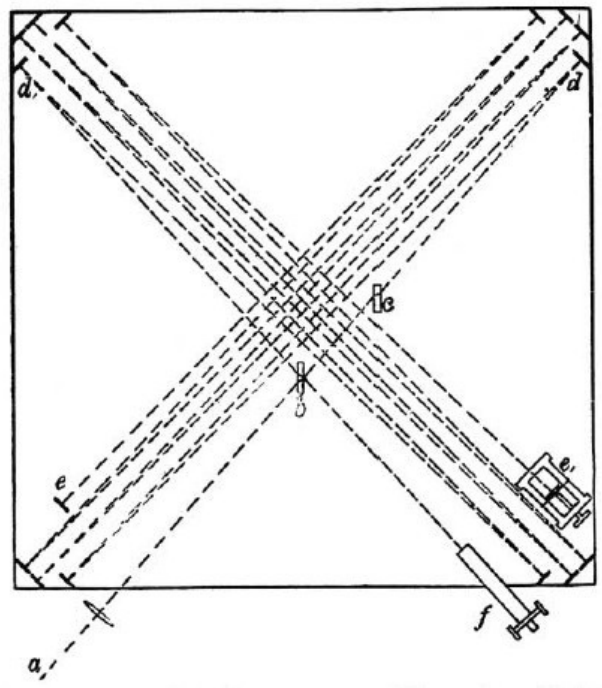
and that can affect matter. (Einstein's theory of Space-time[4])

Without deciding between the two possibilities, the space affected by physical effects is hereinafter referred to as Ether Space. You can assign physical parameters or properties corresponding to the physical parameters to the Ether Space with a value of at least 0. The properties and physical parameters of each Ether Space area are affected by the effect of an object. The Ether Space free of matter and energy is hereinafter referred to as Base Space.
We can be said the Base Space is coherent, consistent, and invariant. In it we can determine the basic unit distance, the speed of a photon and from this the basic time unit.
We can define the coordinate system of the Base Space and according to this coordinate system the position of a spatial point. If we identify a point of the Ether Space according to the coordinate system of the Base Space and compare the property of this point with its properties in the Base Space, we get the change of the properties of a spatial point by an object.

III. The Michelson-Morley experiment

Albert A. Michelson and Edward W. Morley in a series of experiments in the spring and summer of 1887 attempted to determine the directional dependence of the speed of light. The aim of the experiment was to prove the existence of the ether. The result of the experiment showed that the speed of light, in a plane parallel to the surface of the Earth, could not depend on the going motion of the Earth. This finding is considered as a correct fact.
The scientific world of physics also bases two further findings on the results of the experiment: ether does not exist and the speed of light is constant. We will now examine these two statements.

The experiment was performed with an interferometer mounted on a rotatable podium. (Figure 7.) The podium was rotated in 16 equal turning and the amount of wavelength shift was determined after each turning. One turn lasted 6 minutes. The waiting time after each turning and the measurement could take an additional 4 to 6 minutes, so the total time of the experiment was approximately 160 to 192 minutes. Measurements were made on three days, between 8 and 12 of July, around from noon and from 6 p.m. The podium was turned counter clockwise during the daytime measurements and in the same direction of clockwise during the afternoon measurements.



7. Figure. Outline of the experimental device

One unit of data is equal to 0.02 parts of the wavelength of light. We use these original published measurement results[5] and reinterpret them.

Figures 1 to 6 (see end of this document) show the results of each measurement. The measurement results are shown by graphs A.
At the starting setting and at measurement 16, the position of the interferometer arms are the same, so the measured result should be same. Clearly seem there isn't that way. There is also a trend in the measured result, so we can also conclude from the shape of the curves that the change is consistent.
Regarding the small arm distance of the device, the change is considered linear and the individual measured values are corrected by proportional part of the total difference. This is shown by graphs B.
For graphs A and B, we also plotted the polynomial average of them, indicated by the dashed line.

Light travels the physical length of the arms in both directions, so the average speed of light in the arms, if the speed of light is regarded as constant
$v = 2 * L / t$
where L is the length of the arm. The v also is the measured velocity in the geometric centre of arms. Due to the asymmetrical position of the section b-d, the geometric centre of arms is not in the axis of rotation of the device, but in a slightly different position. The slip is approximately 5 cm towards to d mirrors. The estimated distance between the two geometric centres is 7 cm. The interferometer can detect the difference in speeds of

[4]Princeton University Press, The Collected Papers of Albert Einstein, Volume 4., Doc. Retrieved December 19, 2021, https://einsteinpapers.press.princeton.edu/vol4-trans/;151-187

[5]Michelson, AA and Morley, EW (1887), "On the Relative Motion of the Earth and the Luminiferous Ether," American Journal of Science No. 203: 333-345

light measured at these points, if the change of light-speed is consistent.

To the optical length of the arms is true
$a*\lambda_1 = (a + d_0) * \lambda_2$
where 'a' is a natural number and d_0 is a rational number. Due to the rotation of the Earth during one turning of the instrument, the spatial displacement of the experimental site is ~ 10^7 scale relative to the distance between the geometric centres, so the speed of light measured in the two arms can be considered almost equal. Thus, the difference between the results of two measurements
$(a + d_0) * \Delta\lambda - a * \Delta\lambda = d * \lambda$
$d_0 * \Delta\lambda = d * \lambda$
$\Delta\lambda = d / d_0 * \lambda$
where d is the difference in wavelength calculated from the measured result.
We know that the condition
$(d_0 + d) * \lambda <$ coherence length
must be satisfied. We do not know the wavelength of the light used in the experiment, but the estimated coherence length of the light of sodium lamp used is 0.59 mm.[6]
Assuming the limit state $d_{0max} * \lambda = 0.59$ mm, we get the smallest change in velocity that can cause the wavelength deviations measured in the experiment at the same position of the arms.

The average wavelength change between the first and last measurements
$d = 0.37 \lambda$
$L_{max} = 0.59 \text{ mm} = 5.9 * 10^{-4}$ m
$d_{0max} = L_{max} / \lambda = 10^3$
$\Delta\lambda = d / L_{max} * \lambda =$
$= 0.37 * 5.9*10^{-7} / (5.9*10^{-4}) * 5.9*10^{-7} = 2.183 * 10^{-10}$
The wavelength shift
$z = \Delta\lambda / \lambda = 2.183\ 10^{-10} / 5.9 * 10^{-7} = 3.7 * 10^{-4} / 1$ m
In a comparison, the gravitational wavelength shift, measured at the Earth's, is
$\sim 1.1 * 10^{-16} / 1$ m
and the amount of wavelength shift is reduced by the square of the distance. Thus the result is same as gravitational red-shift measured at
$(3.7 * 10^{-4} / (1.1 * 10^{-16}))^{1/2} = 1.83 * 10^6$ m
distance of the ground level of Earth.

The wavelength change between the first and last measurement
$\Delta\lambda = 2.183 * 10^{-10}$
The ratio of the change in wavelength to velocity
$v_2 / v_1 = \lambda_1 / \lambda_2$
$v_2 = \lambda_1 / \lambda_2 * v_1 =$
$= 5.9 * 10^{-7} / (5.9 * 10^{-7} – 2.183 * 10^{-10}) * 3 * 10^8 =$
$= 3 * 10^8 + 1.07 * 10^3$ m/s
$\Delta v = v_2 – v_1 = 1.07 * 10^3$ m/s

[6]Sarunic MV "Example of Coherence Length". Retrieved December 19, 2021, http://www2.ensc.sfu.ca/~glennc/e376/e376l15a.pdf

The place of experiment was approximately 40° north latitude. The average radius of the Earth
$r = 6.37 * 10^6$ m
Of this, the displacement of the Earth surface during the experiment
$L_{16} = \pi/180 * \cos 40 * 6.37 * 10^6 * 40 = 3.68 * 10^6$ m
The average change in the speed of light
$\Delta v_m = \Delta v / L_{16} = 1.07 * 10^3 / 3.68 * 10^6 =$
$= 2.9 * 10^{-4}$ m/s/m
The invariance of the speed of light
$\Delta v_m / v = 2.9 * 10^{-4} / (3 * 10^8) = 9.7 * 10^{-13} / 1$m

Between the first and last measurement, the gravity did not change, so the change in velocity could not be caused by the change in gravity.
According to the Theory of Special Relativity, the length contraction
$L' = L * (1- \Delta v^2 / c^2)^{1/2}$
where v is the velocity of the measuring point in the space. During the experiment, only changes the resultant of the Earth's rotational and going velocity.
$v_1 = 2.9 * 10^4 + 4.65 * 10^2 = 2.9465 * 10^4$ m/s
$v_2 = 2.9 * 10^4 + 4.65 * 10^2 * \cos 40° = 2.9356 * 10^4$ m/s
$\Delta v = 1{,}09 * 10^2$
From this
$L' = L * (1 – 1.32 * 10^{-13})^{1/2}$
$\Delta L = L' – L = 22 * 1.32 * 10^{-13} = -3.89 * 10^{-17}$
This is smaller by 10^{-7} scale than the measured result, so the wavelength deviation cannot result from the relativistic length contraction.

Based on the calculations, we have to assume that there is a hitherto unknown effect that changes the speed of light in the Earth's environment.

According to the Dual Element Universe hypothesis, the change in velocity of the light, in a point of space is in a constant position relative to Earth, decreases when the direction of rotation of the point of space is equal to the direction of travel of the Earth and increases when it is opposite.
If we look at the graphs of the measurement results, we can see that the second (at noon) and the sixth (at afternoon) measurements show opposite changing direction to the assumed changing.
We know that
$(a + d_0) * \Delta\lambda - a * \Delta\lambda = d * \lambda$
where $(a + d_0)$ belongs to the arm in which the adjustable mirror is located. If
$d_0 < 0$
then this arm has a smaller physical length, so the length difference can be compensated by moving the adjusting screw in the plus direction.
If
$d_0 > 0$
then the difference in length can be compensated by moving the adjusting screw in the minus direction.
A change in the physical properties of the device or the air surrounding the device changes the physical or/and optical length of the arms. The description of the

experiment does not include temperature data or data of other environmental effects, but it is likely that the temperature difference changed the proportion of physical length of the two arms, causing different gradient and directions in the graph of the measurement results.

IV. The speed of light

Many experiments [7] prove that the speed of light measured in the Earth's environment at short distances is almost the same in different spatial directions. Based on these, we can state that the Earth can be considered a stationary system in terms of the spread of light, and light spreads in this stationary system. It is likely that the Earth is not a special system that defines the entire Universe, so we can also state that light spreads within the scope of any object relative to the object.

According to the Dual Element Universe hypothesis, light spreads in the matter of ether as its oscillation and local velocity of light depend on the local density of the ether. The same applies to all electromagnetic and gravitational waves also.
By the hypothesis, the gravitational effect and motion of a mass changes the density and unit distance of the ether and the speed of light changes in proportion to it.
The energies in matter tend to equalize, so in the Ether Space is in equilibrium state, the kinetic energy of the adjacent Ether Space material
$E = ½ * m_n * v_n^2$
approximately the same. Therefore
$v_1 / v_2 = (m_2 / m_1)^{1/2}$
and
$v_1 / v_2 = (\rho_2 / \rho_1)^{1/2}$
that is, in the case of a linear change in the density of the ether, the change in the velocity is a root function.

The absolute speed of light that an external observer can measure is the result of a local change in the speed of light and a change in the density of the ether.

From the results of the Michelson-Morley experiment, we demonstrated that the speed of light spreading is varies. According to this, the minimum rate of change is when the Earth turn 40°
$\Delta v = 1.07 * 10^3$ m/s
The difference in the speed of light in the two arms and other environmental factors such as temperature change were not taken into account in the calculation. By the Dual Element Universe hypothesis the density of the ether is not homogeneous and the temperature is the same as the energy level of the ether, so the calculated value is likely greater than the actual rate change. Its value can only be determined by a targeted experiment, but it is certain that it orderly changes, and has significant and measurable value throughout the Earth's turn.
The speed of light can be measured with the wavelength, frequency and time parameters or calculated by combining these values.
The margin of error for single-parameter measurements is quite large [8], the inaccuracy of most accurate measurement[9] is $6 * 10^2$ m/s. These measurements do not contradict the value we calculated.
The final value of the speed of light[10] was determined by calculation from the wavelength and frequency. The inaccuracy of the value is 3.8 m/s, which apparently contradicts our finding that the speed of light can vary significantly.

According to the hypothesis of the Dual Element Universe, the particle G passes through the material layer of the particle B and this cause the oscillation of the material of the particle B, and this oscillation and the flow of the particle G is the electromagnetic wave.
The wavelength of an electromagnetic wave is the diameter of the oscillating material layer. The wavelength is proportional to the time that the particle G stretches the material layer of the particle B, since this is the amount of time the internal stress has to spread in the material layer.
Frequency is the number of oscillations per unit time of the oscillating material layer. The frequency is proportional to the displacement of the material layer of particle B between its two terminal states. This displacement is proportional to the time that the particle G stretches the material layer of the particle B, since this is the time the material layer has move away from its neutral stress state.
It can be seen that both the frequency and the wavelength depend on the velocity of the particle G, i.e. the speed of light, so that the quotient of the two values is nearly the same at all speeds if the field of particle B has the same physical parameters and the type of electromagnetic wave is same. Thus, regardless of the

[7] "What is the experimental basis of Special Relativity?" (nd). Math.Ucr.Edu. Retrieved December 19, 2021, https://math.ucr.edu/home/baez/physics/Relativity/SR/experiments.html

[8] "How is the speed of light measured?" (Gibbs, P.). Math.Ucr.Edu. Retrieved December 19, 2021, https://math.ucr.edu/home/baez/physics/Relativity/SpeedOfLight/measure_c.html

[9] Froome, KD (1952). Determination of the Velocity of Short Electromagnetic Waves by Interferometry. Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences, 213 (1112), 123–141. http://www.jstor.org/stable/98825

[10] "Confirmation of the currently accepted value of 299,792,458 meters per second for the speed of light" (Baird, KM et al).Optics Communications, Volume 31, Issue 3, December 1979, Pages 367-368.

actual speed of light, determining the speed of light as a ratio of frequency to wavelength in the Earth's environment will always give the same result. The λ/f ratio depends on the energy level of the Ether Space and the type of electromagnetic wave and is not equal to the speed of light.
Because the speed of light depends on the density of the Ether Space and the λ/f ratio depends on the energy level of the Ether Space, the speed of light measured or calculated near the Earth is always independent of the speed at which the electromagnetic or gravitational wave propagated before it reached the Earth. Based on this, the determination of light-based distance on the scale of the Universe gives a false result.

Red and blue shift of light is a known phenomenon. Based on the above, we can state that the degree of wavelength shift depends on the difference in the state of the Ether Space at the emitting and detecting points, as follows:
- The gravity of objects changes the physical properties of the Ether Space, causing the speed and wavelength of light to change. Thus, the wavelength shift includes the gravitational difference between the emitting and detecting point of light.
- The movement of objects changes the property of Ether Space, which is also reflected in the change in velocity and wavelength of light. We will see later that the degree of change does not depend on the relative velocity, but on the difference in velocity relative to the environment of object.
- The motion and gravity of an object change the physical parameters of the ether relative to the default values of the object's Own Ether, so the wavelength shift also includes the difference in the basic physical properties of the two objects' Own Ether.

According to the known Hubble-Lemaître Act[11] the red-shift of a distant object increases with the distance of the object. The theory of the expansion of the Universe is based on this phenomenon. It is probably not the distance to the object that matters, but the time at when the light is emitted. The farther an object is, the longer the light started to travel. Based on what has been said so far, it is more correct to assume that the physical parameters of the ether change over time, and not just that the Universe expands.

V. The Ether

According to Axiom 2 of Theory of Special Relativity, light spreads at a constant rate independent of the speed of the source. This statement assumes that exist an Ether Space in which the light spreads, regardless of the location and velocity of the source. We have already refuted the constant speed of light, now let's look at the independence of the motion.
The Sagnac-effect proves that the speed of light spreading is independent of the speed of the source.
However, it is a proven fact that light emitted from a light source moving with the Earth spreads relative to the Earth, the Ether Space of light m the Earth.
The two proven motion properties of light are only possible at the same time if there is a hitherto unknown effect that moves the light coming out of the light source along with the Earth's moving system, i.e. the ether must exist.

Based on the above, the correct wording of Axiom 2 is:
Light in the vacuum always spreads, relative to the ether, at a velocity V determined by the ether and independent of the state of motion of the light-emitting body.

According to the Dual Element Universe hypothesis the ether is a set of particles that are flexibly connection to each other. According to this model, let us exam the relationship between the ether and an object:

The space among the material of the object is also filled by the ether, so the total mass of the object is related to its Ether Space. When an object makes a going or rotating motion, its material moves the ether particles among matter and this effect spreads throughout the Own Ether Space. Due to the flexible connection of the ether particles, the entire Own Ether Space tries to move together, which is obstructed by the surrounding ether. This creates a shear force between the ether particles, proportional to the speed and mass of the object.
According to the Dual Element Universe hypothesis, as the gravitational force decreases, the oscillating velocity of the matter of ether increases and density of the ether particles decreases. We can also conclude from experience that a decrease in gravity is accompanied by an increase in the speed of light. As the oscillating rate of the matter of ether increases and the density decreases, the shear resistance between the particles decreases, so that there is a space distance from the centre of mass of the object, when the shear force excited by the motion will be greater than the shear resistance between the ether particles. At this distance, the ether layers can move relative to each other, creating the Own Ether Space of object that moves with it the object.
A force is transmitted on the surface between Own Ether Space and the outer ether, despite the displacement, which also affects the movement of Own Ether Space. Ether layers can also move in Own Ether Space to each other, causing the structure of Own Ether Space to move slowly. The amount of displacement decreases to move to the object.
Despite the displacement of Own Ether Space and the surrounding ether, the pressure and energy level of the outer ether continue to affect the pressure and energy

[11]Wikipedia. Hubble's law. Retrieved 19 December, 2021, https://en.wikipedia.org/wiki/Hubble%27s_law

level of Own Ether Space. Thus, the effect of the gravity and motion of an object can only change the physical parameters of the Own Ether Space relative to this external ether. Therefore, the physical parameters of Own Ether Space, which can be considered a stationary system, also depend on the physical parameters of the surrounding ether. Thus, the properties of the ether in the Earth's environment, including the speed of light, the relative time and intensity of their change, could only be determined by calculation if we knew the physical parameters of each external Ether Space. Failing this, we can only determine these experimentally.

Now let us see the empirical facts which cannot be explained by the structure of Space-Time, but which coincide with the effects according to ether theory.

The moving systems of the Universe show a high degree of regularity. The most of object rotating around a central object have prograd rotation and orbiting, i.e. they are the same direction as the rotation of the central object. Whether we look at star systems or galaxies, the orbits are close to a plane. According to the currently accepted explanation, these regular movements are created by gravity. Let us see why this is not possible:

According to Space-Time theory, the mass of an object affects the structure of Space-Time, and the curvature of the structure of Space-Time affects objects. In a system, the change in the structure of Space-Time depends only on gravity, so the spatial points on the same gravitational potential are equivalent to each other. Therefore, a point in space cannot contain information about the rotation of the gravitational mass, so it is clear that Space-Time is unable to initiate and maintain orbiting motion.

The rotating object's Own Ether Space is capable of creating a force perpendicular to the radial direction of the object. This force moves the orbiting objects. Orbiting objects also have their Own Ether Space, so they orbit velocity less than the central object's rotating velocity. In young star systems, this difference is large, but over time the orbital velocity returns to the equilibrium state determined by the rotational velocity of the central object, the mass of the central and orbiting object, the distance between the two, and the density and energy level of the ether.
Moving away from the central object, the shear resistance of the ether decreases, thus the maximum force of rotating ether decreases. Therefore, the orbiting velocity of objects in galaxies does not increasing by increasing the distance to the central object.
If the mass / rotation ratio of the central object is large enough, there may be a spherical space within which the ether particles cannot move relative to each other at all. At this point, the ether behaves as a rigid body and the orbiting objects do not move relative to the central object. This effect can cause the spokes of spiral galaxies.

The velocity of the Own Ether Space of a rotating central object at same distance of it is greatest on the equator of the object, and moving away from it toward the pole. If the orbit of an orbiting object does not coincide with the equator, then on the equator side of the object, the relative velocity of the ether to the object is greater than on the side farther from the equator. Where the relative velocity is higher, the ether material is denser, so its oscillation velocity is lower. According to the Dual Element Universe hypothesis, the G particles collide with the electrons and protons of matter and this force displacing the object in space. The velocity of the G particles adapts to the oscillation velocity of the ether, so they collide with the equator side of the orbiting object at a lower velocity than the opposite side. The difference in force due to the difference in velocity moves the orbiting object towards the equator.
The force also decreases approaching the central object. For a high-mass central object, there may be a sphere within which the force is so small that it can no longer modify the plane of the orbit of orbiting object.

On the side of the orbiting object facing the central object, the density of the ether is higher than on the opposite side. The force of the G particles is same as the force of gravity and decreases as it approaches the central object. This may explain the difference between the mass-calculated and the measured motion of objects in high-mass systems.
In addition to this force, the denser ether acts on the orbiting object with greater torque and this difference in torque determines the rotation of the object decisively.
According to the Dual Element Universe hypothesis, every moving object is subjected to a force that moves its axis of rotation in the direction of travel. Since the direction of travel of the orbiting object is constantly changing, this effect is only moderate. The deviation of the trajectory, the torque and the rotation due to the movement together determine the axis of rotation of a rotating object. The intensity of the three effects, i.e. which one prevails best, depends on the mass of the object and the central object, the distance between the two, the velocity of the orbit, and the direction of the orbit.

From these it is clear that according to ether theory, the motion of celestial objects can be explained in a way that corresponds to experience.

Considering the real speed of light and the gravitational effects of the ether, we can rightly assume that we do not imagine the mass and motion of distant celestial objects and galaxies in reality. These discrepancies may also give rise to the assumption that the anomalies we observed in the motion and calculated mass of galaxies are not due to the assumed dark matter but to erroneous

assumptions. Thus, it is also possible that dark matter does not exist.

VI. Physical systems

Based on the above, the probable structure of the ether can be well determined and based on it can be determined the probable relationship between two physical systems as well.
Let there be two objects at such a distance that they have no detectable effect on each other by their gravity or by their Own Ether Space. Let their relative velocities be 0. If we start any object at velocity v, the physical parameters of that object's Own Ether Space change. It is clear from this that by measuring the parameters of the ether, it is possible to determine which object is moving and which is stationary. Thus, the statement of the Theory of Special Relativity that only their relative velocities matter in the relationship of two objects is clearly false.

Let K and K' be objects, at a distance b from each other, whose relative velocities is v. Can always be fitted to the two objects as origins k and k' coordinate systems whose x-axis coincides with the velocity vector of v. According to the Galileo principle of relativity, the two coordinate systems are equivalent, either of which can be considered as a reference system.
If we want to compare an object or event defined in two coordinate systems, we must first determine the transform coefficient between the two systems and transform the objects or events into a common system.
Let our reference system be the k coordinate system. A coordinate system is determined by the position of the axes, the direction of the axes (direction of value growth), and the size of the unit. Let the position of the axes be same. Let the ratio between the units be
$\beta = x_1 / x_1'$
and
$\beta' = x_1' / x_1$
We have no value in the y and z axes. In the coordinate system k, the location of the object K' is b, and the relative velocity is v. If we switch to the coordinate system k', then the location of the object K is –b and the relative velocity is –v. It clearly follows that the transformation matrix of the two systems
$k \rightarrow k' [0, -1, 0, \beta]$
$k' \rightarrow k [0, -1, 0, \beta']$

VII. Flaws in Theory of Special Relativity

Let us have an event in system k with time t. Let us have a system k' moving at speed v related to the system k. Let us determine the relative time of the event in the moving k' system
$t' = t * (1 - v^2 / c^2)^{1/2}$
Based on t ', let us determine the relative time of the event in the system k
$t'' = t' * (1 - v^2 / c^2)^{1/2}$
Because
t = t"
the time of the event in the k system, therefore
$t * (1 - v^2 / c^2)^{1/2} = t' * (1 - v^2 / c^2)^{1/2}$
and from this
t = t'
Thus, applying the time dilation formula, we obtain that the local times in systems k and k 'are the same.

Now let us examine, if the calculation of relative times gives this result, then what could have led to the erroneous conclusion. The Theory of Special Relativity is based on the Lorentz Transformation[12]. The Lorentz transformation is much more transparent, so let's look at that first.

The basis for deriving the transformation is to determine in the moving and stationary system the way taken by the light. To do this, it write the distance measured in the moving system as
$x' = \gamma * (x - v * t)$
where x' is the distance travelled by the light in the moving system, x is the distance travelled by the light in the stationary system.
Then, with reference to the equivalence of the inertia systems, it states that it seen from the moving system as
$x = \gamma * (x' + v * t')$
In the previous chapter, we showed that the transformation matrix of the two systems is
$k \rightarrow k' [0, -1, 0, \beta]$
From this the correct formula is
$x = -\gamma' * (x' - v * t')$

We also prove this statement in algebraic ways:
To see from the k 'system, the v velocity changes the sign, so the expression (+ v * t) is correct.
The x' is the relative position of the two systems. The location of k seen from the k 'system in the '-' direction, so x' must also change its sign, so the correct expression (-x'). Therefore
$x = \gamma' * (-x' + v * t')$
from this
$x = -\gamma' * (x' - v * t')$

Since the transformation considers the speed of light to be direction independent, we can examine the beam of light in both systems that travel from the stationary system to the moving system.
1.)
It is true for the motion of light and relative motion of systems that their relative directions are the same observed from any system, so
$(r) * c * (q) * v = (-r) * c' * (-q) * v'$
where r and q +/- 1. From this

[12]Wikipedia "Derivations of the Lorentz Transformations". Retrieved December 19, 2021, https://en.wikipedia.org/wiki/Derivations_of_the_Lorentz_transformations#Galilean_reference_frames

$v / v' * [(q) / (-q)] = c' / c * [(-r) / (r)] \rightarrow$
$v / v' = c' / c$
Therefore, if viewed the relative velocity from a moving system
$v' = -v$
then the velocity of light must be
$c' = -c$
On the basis of equality
$x = c * t$
and since
$t > 0$
The
$-x' = -c * t$
equality must be. Therefore
$x = \gamma' * (-x' + v * t')$
from this
$x = -\gamma' * (x' - v * t')$
2.)
The measured length of the path travelled by any point in a moving system (absolute value) is always longer in the stationary system than in the moving system, so observed from k
$|x'| = |\gamma| * |x - v * t| < |x|$
and observed from the k' system
$|x| = |\gamma'| * |x' + v * t'| < |x'|$
must be. Observed from the k' system, if the velocity has a '+ sign, the equation can only be true if
$|x| = |\gamma'| * |- x' + v * t'| < |x'|$
therefore
$x = -\gamma' * (x' - v * t')$

If we divide the equations written for the systems k and k', we get
$x / x' = -\gamma' / \gamma * [(x' - v * t') / (x - v * t)]$
$x / x' = -\gamma' / \gamma * [(c * t' - v * t') / (c * t - v * t)]$
$x / x' = -\gamma' / \gamma * [((c - v) * t') / ((c - v) * t)]$
from this
$(c * t) / (c * t') = -\gamma' / \gamma * (t' / t)$
$t^2 / t'^2 = -\gamma' / \gamma$
If
$t' = \gamma * t$
is true, then
$t^2 / t^2 * (1/\gamma^2) = -\gamma' / \gamma$
and
$1 / \gamma = -\gamma'$
If we keep the statement that the equivalence of inertia systems also means the equivalence of the transformation coefficient, then
$\gamma = -\gamma' = 1$
must be. If we accept that the transformation coefficients can be different, then
$t' = t * \gamma$
and γ is not specified.
If we reject the conclusion of the transformation that
$t' = \gamma * t$
we still have to assume the transformation symmetry between the two systems, so
$1 / \gamma = -\gamma'$
and
$t^2 / t'^2 = 1 / \gamma^2$
from this
$t' = t * \gamma$
and γ is not specified.
From these we can see that the derivation according to the Lorentz transformation gives a real result for any γ value, the time dilation cannot be determined by the derivation.

In Theory of Special Relativity, Einstein avoided the transformation of x between the two coordinate systems. Instead, he defined what he meant by simultaneity. According to this, for a light travelling between the endpoints A and B of a stationary r rod is true that
$t_1 = r_{AB} / c$
and
$t_2 = r_{BA} / c$
and
$t = (t_1 + t_2) / 2$
Then he applies the same to the r rod moving at velocity v and without examination declares that
$t_1 = r_{AB} / (c + v)$
and
$t_2 = r_{BA} / (c - v)$
and
$t = (r_{AB} / (c + v) + r_{BA} / (c - v)) / 2$
It applies this to a moving k system and declares that
$\tau_1 = (\tau_1 + \tau_2) / 2$
where τ_1 is the time of the '+' way of light and τ_2 is the time of the '-' way of light between the endpoints of section r in the moving system. And from this sets up
$1/2 * [1/(c-v) + 1/(c+v)] \vartheta_\tau/\vartheta_t = \vartheta_\tau/\vartheta_{x'} + [1/(c-v)] \vartheta_\tau/\vartheta_t$
equation.
It is a proven fact that light spreads near the moving object relative to the object at the same speed in all directions, so the correct form of the equation based on experience
$1/2 * [1/c' + 1/c'] \vartheta_\tau/\vartheta_t = \vartheta_\tau/\vartheta_{x'} + [1/c'] \vartheta_\tau/\vartheta_t$
where c' is the velocity of light light in the system of the moving object. From this we can conclude that
$\tau = \alpha * (t - 0 * x')$
and
$t = x' / c'$
from this
$\xi = \alpha * c / c * x' = \alpha * x'$

According to Einstein, α is a function of φ (v). He adds a third, standing coordinate system to the two coordinate systems. Performs the transformation from the original stationary coordinate system to the moving system and then from the moving system to the third stationary system and declares that the double transformation means a product of a function
$\varphi(v) * \varphi(-v) = 1$
According to Einstein
$\varphi(v) = 1$
which he explains by the fact that the length of the rod is independent of the direction of movement, it is always '+' value, therefore
$r / \varphi(v) = 1 / \varphi(-v)$

that is
$\varphi(v) = \varphi(-v)$
and it follows
$\varphi(v) = 1.$
The length of the rod is indeed independent of the direction of motion, but we work in a coordinate system and measure the length of the rod by the path travelled by light, which changes sign during the transformation between the systems. So
$-c * t = - x$
therefore
$\varphi(v) = -\varphi(-v)$
$\varphi(v)$ can be 1 and can be -1. We know that the transformation matrix of systems is
$[0, -1, 0, \beta]$
therefore
$\varphi(v) = -1$
must be. So
$\tau = -1 * -t = t$
and
$\xi = -1 *- x' = x'$

We have now proved that the Theory of Special Relativity cannot determine the dilatation of time, but it is worth examining the derivation of the theory further.
He defined the simultaneity by
$t = (r_{AB} / (c + v) + r_{BA} / (c - v)) / 2$
equation and declares that the clocks in the moving system are not in sync. With this he did not yet connect the time of the stationary and the moving system, he only found that the times in the moving system, at the two endpoints of section r, are not in sync. So this is asynchrony within the moving system.
The time of the stationary system is introduced into the independent variable of the function τ as the initial time value
$t = 0$
He declare that we can count the process from
$t > 0$
as well, but did not specify how. Because time is only defined in the moving system and the t as an independent variable is not yet defined, instead only τ can be used and the value of t can be specified as
$t = \tau / \alpha$
So the
$\tau = \alpha * (t - v / (c^2 - v^2) * x')$
equality, based on available data is
$\tau = \alpha * (\tau / \alpha - v / (c^2 - v^2) * x')$
$\tau = \tau - \alpha * v / (c^2 - v^2) * x'$
which equality can only be true at
$v = 0$ or $x' = 0$
case. If we substitute the real value c', then on the basis of equality
$\tau = \tau - \alpha * x' / c' = \tau - \alpha * t$
$t = 0$ or $x' = 0$.

The Theory of Special Relativity calculated the dilatation of time for a special case of the direction of light and a moving system. Since the theory is that the rate of change of time is a real physical variable, the value of a physical variable at a point in space is obtained by summing all its values at that point.
Based on the angle between the way of the light and the direction of the relative movement of two system
$\tau = t * \Sigma[1 / (1 - v_\alpha^2/c^2)^{1/2}]$
There is an opposite pair of light in each direction with which the position of the velocity vector is equal and its direction is opposite. We can write on these pairs of directions as
$1/2 * [1/(c-v_\alpha) + 1/(c+v_\alpha)] \vartheta_\tau/\vartheta_t = \vartheta_\tau/\vartheta_{x'} + [1/(c-v_\alpha)] \vartheta_\tau/\vartheta_t$
and
$1/2 * [1/(c+v_\alpha) + 1/(c-v_\alpha)] \vartheta_\tau/\vartheta_t = \vartheta_\tau/\vartheta_{x'} + [1/(c+v_\alpha)] \vartheta_\tau/\vartheta_t$
and from these
$\tau^+ = t * \Sigma[1 / (1 - v_\alpha^2/c^2)^{1/2}]$
and
$\tau^- = t * \Sigma[1 / (1 + v_\alpha^2/c^2)^{1/2}]$
The two equations are added together we get
$\tau = t$
Since this is true for all pairs of directions, the time dilation in the specific point of space is
$\Sigma\tau = \Sigma t$
Thus, we would not be able to experience time dilation at X' location even if our transformation coefficient was not 1.

Thus, we have demonstrated that time dilatation cannot be explained by the derivation and line of thought of the Theory of Special Relativity or the Lorentz Transformation. The fact that the conclusion of experience and theory is significantly the same is due to the fact that the rate of spreading of light and the degree of local time are the result of the same process. Thus, although they are not directly dependent, the results of the processes affect both in a similar way, so a change in one is accompanied by a change in the other.

An explanation of the real cause of time dilation can be found in the author's hypothesis of a Dual Element Universe. In the following, we will get acquainted with the basics of this hypothesis and then determine the reason of the time dilation.

VIII. The Dual Element Universe

For reasons of length, we do not derive and do not prove the hypothesis here, we only list its statements necessary for understanding this paper.

One particle exists and it has two manifestations:
It is a state of loose structure (particle B), which is conceivable as an elastic spatial mesh, and a solid state (particle G) when its entire material is compacted into an elastic sphere. In the processes, the two particles almost always retain their state, it is irrelevant in the description of the hypothesis that they are actually two manifestations of a particle, so consider them as two separate particles.
The basic parameters of particle B and particles G are size, amount of material (mass), flexibility and velocity.

Particle B has an additional property, which is the rate of vibration of its material.

Particle B fills the space. Particles G can pass through particles B. In this way, the particle G elongates the material layers of the particle B and generates its oscillation. The oscillation of the material of particle B and the velocity of particle G affect each other. There is an equilibrium ratio of the velocity of the oscillation of the particle material B and the forward motion of the particle G that the both maintain as particle G travels through the particles B.

If the kinetic energies in a space are reduced, the particles G stop in the material of the particle B. As the kinetic energy increases in the space, the particle B is able to retain the already stuck particles G. The particle B filled with particles G is a particle P. The number of particles G accumulating in particle B has two equilibrium states, the smaller value is known as the electron and the higher value is known as the proton.

In the particles P, the particles G oscillate together with the elastic material of the particle P. The particles G that collide with the particle P lose their kinetic energy. This energy, from the particle P, is released to the environment as oscillation of the particle B field. At the equilibrium state of the particle P, when a particle G collides to the particle P, a particle G leaves the particle P, with less velocity than the velocity of the incoming particle G, so the number of stuck particles G is constant. Due to the different velocities of the particles G moving towards and away from the particle P, act a force on the material layers of the particle B field and move it until the pressure of the particles B (elastic reaction of the material) compensates this force. Moving away from the particle P, the field pressure (density) of the particle B decreases.
A change in the density of a particle B field causes a change in the oscillation velocity by
$v_1 / v_2 = (\rho_2 / \rho_1)^{1/2}$
equation.

A moving particle P compresses the particles B in front of it, and the particles B expand behind particle P. The two-way pressure difference of the particles B field tends to equalize in the particle B field surrounding the particle P.
The surface oscillation of the particles B inhibits the relative displacement of the particles B. This force corresponding to the adhesion friction between the particles B decreases as the density of the particle B field decreases as it moves away from the particle P. In the particle B field, there is a surface where the shear force between particles B resulting from the movement of the particle P is equal to the adhesive frictional force holding the B particles together. The particles B field in the space bounded by this surface are the field K of the particle P. At the surface of the field K, the particles B can move relative to each other. The particles B in the field K move together with the particle P. Similarly, rotating particles P have a field K rotating with them.

The regular oscillation of a particle B field is the electromagnetic wave. The shock-like particle B field motion is the gravitational wave. Both are excited by moving particles G.

IX. The time and the time dilatation

We have seen that time dilation cannot be determined based on the relative velocities of two objects. Let us look at what can cause it actually:

According to the Dual Element Universe hypothesis all changes and interactions among objects are mediated by particles G. If the velocity of the particles G changes, the energy level of the system changes only, but the density of the interactions does not change permanently. If the number of particles G changes in a space, then the number of interactions also changes, i.e. the passage of time can be identified by the particle G density of the space.

We know that in the field K of the moving particle P, in the direction of travel, the density of the particles B material increases, and its oscillating velocity decreases. On the opposite side of the particle P, the density of the particles B material decreases and the rate of oscillation increases. For the sake of simplicity, we will now look at the processes only in the x-coordinate direction corresponding to the direction of motion, but to describe the state of the full system, it must be determined and summarised for the entire surface of the particle P.

In the direction of travel of the moving particle P, the number of particles G impinging on the particle P increases, and the number of particles impinging on particle P on the opposite side of the particle P decreases. If the velocity of the particles G is taken to be constant, then the change in the number of particles G impinging on the particle P is linearly related to the velocity v_P of the particle P, and the change in the bi-directional collision number is equal to each other.

The oscillation velocity of the material of particle B and the velocity of the particles G changes according to a power function which depend on the local density of the material of particle B.
The vary velocity of particle G around the moving particle P also changes the particle G density of the space. Due to the change, the number of particles G impinging on the particle P changes according to an f(x)A root function which depend on v_P. Be
$f(x)A_1 = 1$
for the stationary particle P. When a particle P moves, the density of the particle G material varies in the direction of motion according to the section $1<x<2$ of the function f(x)A, in the opposite direction according

to the section $0<x<1$ of $f(x)A$. The density of the particle G material in both way determined by value of $f(x)A$ function at same +/- Δx x-value from x=1, depend on v_P velocity. In the velocity range $0<=v_P<=v_G$ (where v_G is the velocity of the particles G outside the field K), the total number of particles G impinging on the particle P in the x-direction is

$f(x)\Sigma G_{0\text{-}2} = f(x)A_{0\text{-}1} + f(x)A_{1\text{-}2}$

that is, the sum of the part of the root function between values 0-1 and 1-2. $f(x)\Sigma G_{0\text{-}2}$ is a monotonically decreasing function.

There is no theoretical reason why a particle P can't move faster than the speed of v_G (speed of light). Since in this case particle G does not impinging on the increasing surface of particle P at all, but the number of impinging particles G increases continuously on the opposite side, the rate of change of the time dilation decreases and even the time dilation also can decrease. It cannot be ruled out that there is an available velocity when the own time of moving particle P passes faster than in a stationary system.

We know that in the field S of an object, the oscillation velocity of the particles B material and the going velocity of the particles G increases away from the object. In all places, the velocity of the particles G moving towards the object is higher than the velocity of the particles G moving away from the object, and this velocity difference increases towards the object. Based on these, the increase in the velocity of particles G moving away from the object (decrease in particle G density of the space) is greater than the decrease in velocity of particles G moving toward the object (increase in particle G density of the space). The particle G density of the space is proportional to the difference in velocity of the G particles travelling in the two directions. Toward the object, the difference in velocity of the G particles travelling in two directions increases, therefore the number of particle G impinging on the particle P decreases, which corresponds to a slowdown in local time.

X. The experiments

The best way to prove a hypothesis is if the described facts are the same as the experience. Therefore, we now provide some experiments that can clearly demonstrate or refute our statements.

1.

Let be a Michelson interferometer with the largest equilibrium distance of arms as technically possible. The base position of the interferometer let be parallel to the ground. Rotate the structure around arm A so that the angle between arm B and the ground surface let move in the 0-180° angle range.

We will find that the speed of light in arm B increases and after a time decreases again. Ignoring the change in the speed of light detected in Experiment 2, the increase in speed shows a root function.

The change in the speed of light is caused by the difference in the density of the particles B material in the gravitational field S of the Earth.

1 / b.

Let us move the same interferometer with the horizontal arms A and the vertical arms B to a different height from the ground at a given geographical location, preferably at the same time. The change in velocity measured in arm B must be corrected with the change in speed of light associated in Experiment 2.

We will find that as the altitude changes, the difference in the speed of light in the two arms decreases.

This determines the extent of the effect of a gravitational mass on the Ether Space.

2.

Let be a Michelson interferometer with the largest equilibrium distance of arms as technically possible. The default position of the interferometer shall be:

Arm A let be parallel to the ground. Adjust arm B at an angle and in a direction that the line joining the equilibrium points of the two arms let be parallel to the direction of travel of the Earth when the instantaneous velocity in the space of the place of experiment, measured in the direction of travel of the Earth is equal to the velocity of the Earth. The experiment also gives results at other angles arm B to the ground, but the most sensitive measurement is obtained with this orientation.

The change in the speed of light in the arms shall measure for 24 hours.

We will find that during the course of 24 hours, the difference in the speed of light in the two arms changes continuously.

Let t = 0 be when our measuring point is on the side of the Earth in direction of travel it and its instantaneous velocity measured in the direction of the Earth's travel is equal to the Earth's velocity.

After correction by other effects, the measurement will shows that the difference in the velocity of light between the two arms increases between 0 and 12 hours and decreases between 12 and 24 hours. It is likely that the change is a root function here as well.

The experiment shows the effect of the Earth's motion on the density of the particle B field.

The measurement results shall be corrected for the following effects:

The gravitational effect shown in Experiment 1 is can also affect by the gravity of the Sun, Moon, or other massive object.

Due to the rotation of the Earth, the absolute speed of a geographical position is the sum of the velocity of going and orbit of the Earth. Therefore, the two functions between 0 to 12 and 12 to 24 hours are not symmetric.

3.

Let be a Michelson interferometer with the equilibrium points of the arms coinciding. Adjust the length of the arms so that the difference let be as large as possible.

The base position of the interferometer let be parallel to the ground and one arm let be in the West - East direction. Determine the wavelength shift at regular intervals without moving the arms. The measurement is performed for 24 hours to obtain the degree of change in the density of the Ether Space by the going motion of the Earth. From this change we can also determine the change in the speed of light.
Let t = 0 be when the measuring point is on the direction-axis of motion of the Earth at night. We will find that between 0 and 12 hours the velocity of light increases, between 12 and 24 hours it decreases. The rate of change increases from 0 to 6 and 12 to 18 hours and decreases at other times.

4.
Let us have a precise clock in a well-chosen geographic location. Select an appropriate number of stars whose exact apparent position is known and the exact geographical position of the observation can be calculated from the apparent position. The experiment is 24 hours long, so let be selected object is clearly visible from the measuring point, during the entire rotating of the Earth.
At regular times, let us record the position of the selected objects and the exact time of capture.
At the end of the experiment, based on the known positions of stars, determine the p_n geographical position of the capture by the known position of objects and the t_n theoretical geographical position of the measuring point by the move and rotate of the Earth.
We will find that the points t_n and p_n do not coincide, the position of the points t_n will be shifted (delayed) in the direction of rotation of the Earth relative to the points p_n.
Let t = 0 be when our measuring point is on the opposite side of the Earth in direction of travel it and its instantaneous velocity measured in the direction of the Earth's travel is equal to the Earth's velocity.
Between 0 and 12 hours the difference between t_n and p_n increases, and between 12 and 24 hours it decreases.
The experiment shows the time dilation caused by a change in velocity of particle G related to a change in the density of the gravitational field S. Comparing the measurement results with the result of Experiment 2, we also obtain the relationship between the density of the particles B and the local velocity of light. This can prove that the local velocity of light is not constant.
The result of the experiment shall be modified by the correction specified in Experiment 2.

If these experiments give measurable results, it proves that the Dual Element Universe hypothesis is a correct assumption and that space is filled not by the Space-Time structure but by the etheric particle B field.

5.
Experimental determination of whether a system is subjected to a gravitational force or an acceleration force:
The velocity of the radial light let measured at the centre of mass of the system, or at points equidistant from the centre of mass in terms of mass distribution. If these velocities in different directions are the same, the system gravitates, if the values of velocity show a difference, the system accelerate.
Based on the deviation, the direction of acceleration and moving can also be determined.

6.
Let us measure the wavelength and frequency of an electromagnetic wave. Let the measurement technique be that measures only length and time and does not use assumed relationships between parameters c, λ, and f. Let the measurement be repeated by changing the time or the altitude of the measurement or the ambient temperature.
Let the measurements be repeated with several different types of electromagnetic waves.
We will find that as conditions change, the wavelength and frequency change in the same direction. Values increase as density of ether increases (velocity of light decreases) and values decrease as ether density decreases (velocity of light increases). The density of the ether increases when altitude or temperature decreases. According to the time, the ether is densest at astronomical 18.00 (pm) and it has lowest density at astronomical 06.00 (am).
It is likely that the λ/f ratio also varies, but to a much lesser extent.
The experiment can prove that the equation $c = \lambda / f$ is not true, the wavelength and frequency depend on the type of electromagnetic wave and the density of the ether.

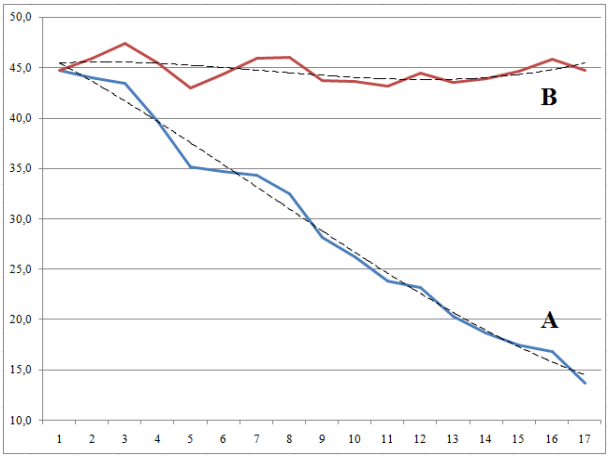
XI. Summary

In our opinion, the above can prove that

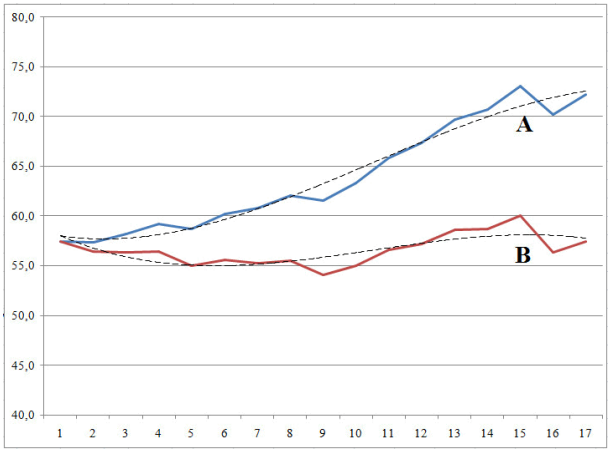
1) The ether must exist.
2) The physical state of ether is changed by the gravity and motion of an object.
3) Each object has its own Ether Space, which moves with it, and this Ether Space, in terms of the objects and electromagnetic waves moving in it, is considered to be a stationary system.
4) The electromagnetic wave spreads in the ether and its velocity, wavelength and frequency depend on the physical properties of the Ether Space.

Furthermore the different physical systems are not equivalent and the Theory of Special Relativity is not true in its logic or conclusion. Hopefully, the explanations for the Dual Element Universe hypothesis were also convincing. These are already sufficient arguments for the proposed experiments to be carried out and, in the light of their results, the author's hypothesis will be considered scientifically.

Figures



1. Figure



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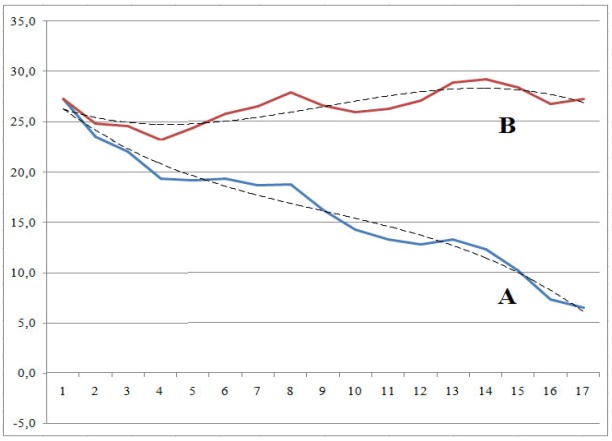

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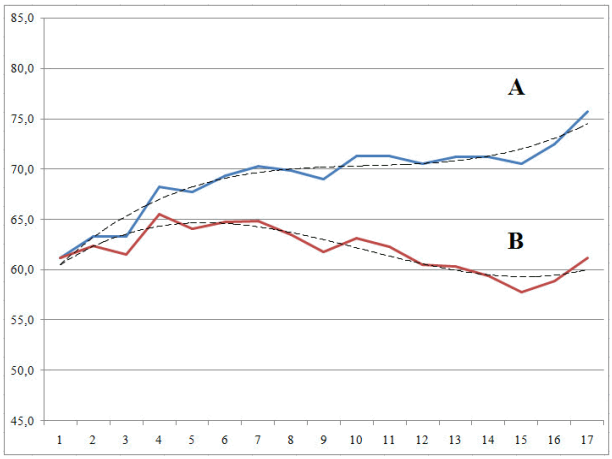
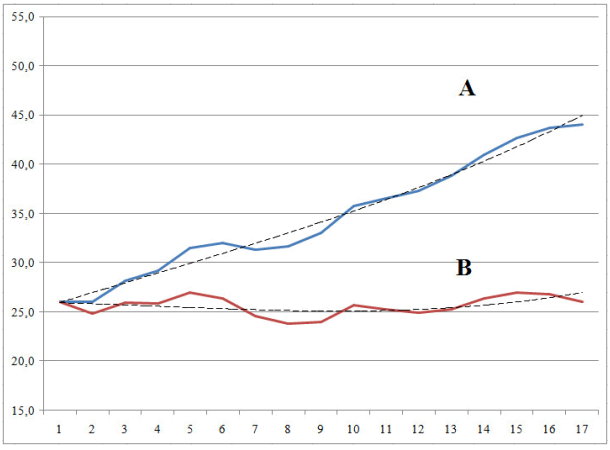
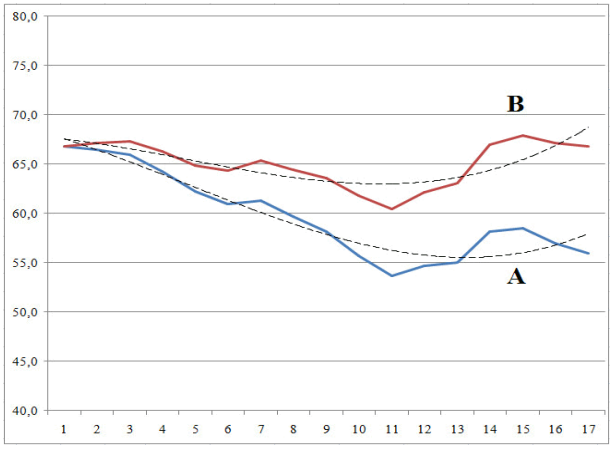


4. Figure



5. Figure



6. Figure