PHYSICAL SCIENCES

QUANTUM BIG DIMENSION THEORY

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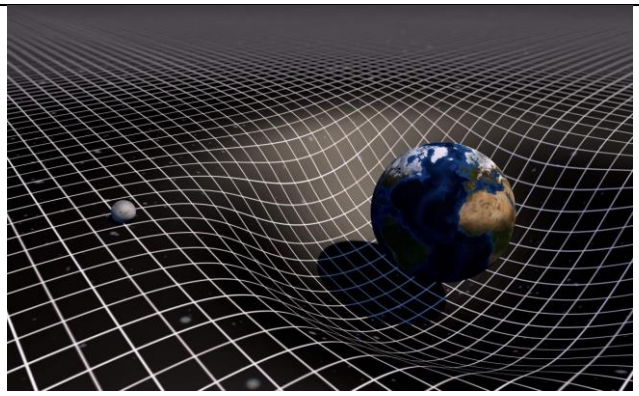
Abstract

Until the middle of the 19th century, Newton's laws of classical mechanics dominated science. However, some phenomena that emerged towards the end of the 19th century could not be fully explained qualitatively by the laws of classical mechanics. These phenomena were considered micro-phenomena in terms of size. It was possible to fully explain these phenomena only as a result of the development of quantum mechanics. Therefore, the laws of motion of micro and macro systems are completely different from each other. The existence of this fact is a factor that makes it difficult to build a general theory. According to scientists, the construction of a general theory can eliminate the contradictions between these directions, and today the best position in this matter belongs to the M-theory. However, there is a big problem in determining how to approach the M-theory. It is obvious that one can be sure of the correctness of this approach only when it is possible to fully explain all the phenomena in the Universe, both qualitatively and quantitatively. What is needed now is a complete explanation of all physical phenomena occurring in 3-dimensional space. Quantum Large Scale Theory highlights the important facts that must be taken into account in order to fully explain all phenomena related to the 3-dimensional space part of M-theory. The presentation of this theory and its correct approach will lead to a more accurate understanding of the Universe. The field served by the theory is to complete the 3-dimensional space part of M-theory by taking into account the effects of high-dimensional spaces and using string theory.

Purpose: It consists of completing the part of M-theory related to 3-dimensional space by fully explaining all micro and macro phenomena quantitatively and qualitatively through string theory and taking into account the effects of high-dimensional spaces.

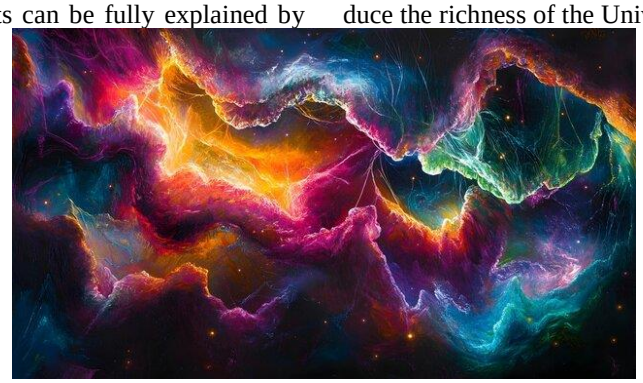
Keywords: M-theory, String theory, uncertainty principle, dark matter, spatial defect, cosmic tunneling, quantum entanglement, speed limit.

İntroduction. It is known that one of the most interesting issues of people, perhaps the first, is the question of how the Universe was formed and how it works. One of the important issues that scientists are working on today is to discover a general law that can fully explain the cause of every process occurring in the Universe. Scientists' ideas on this issue are that the most important role in the formation of the Universe was played by the forces of interaction. In this regard, our goal is to find a general theory that contains the mechanism of all interaction forces. All events occurring in the universe can be divided into two parts, micro and macro events, based on their size. It is clear that all macro events that we observe in our daily lives are subject to the laws of classical mechanics of I. Newton. That is, the application of the laws of classical mechanics to macro events always results in success. Based on this fact, scientists were led to believe that the application of the laws of classical mechanics in the microworld would give positive results. However, the experiments conducted surprised scientists a lot. When trying to study the microworld with the laws of classical mechanics, a number of problems arose. The results showed that a new physics - quantum physics - should be created to study the events in the microworld. Thus, when classical and quantum mechanics are studied separately, they give the desired results flawlessly. Since the final theory combines the explanation of micro and macro events within itself, a bridge must be built between classical and quantum mechanics. In addition, the final theory must also combine the explanation of additional phenomena. Currently, the greatest success in this direction belongs to "M-theory". The essence of M-theory is to build a final model of the Universe in high-level spaces by including the smallest indivisible particle in the Universe in the obvious problem. Here, the smallest, primary particle is considered to be a string. It is obvious that it is necessary to approach strings in different ways to explain the mechanism of matter and physical field forms of matter, from the smallest particles to the largest objects, and the various phenomena occurring between them. When we study the nature of physical fields, we see that the gravitational field is quite different from other fields. Based on his general theory of relativity, A. Einstein came to the conclusion that space and time are a single whole and are like a piece of material. All objects with mass bend this material, and a hole is formed around the bent material. As a result, objects with a smaller mass move around objects with a larger mass.



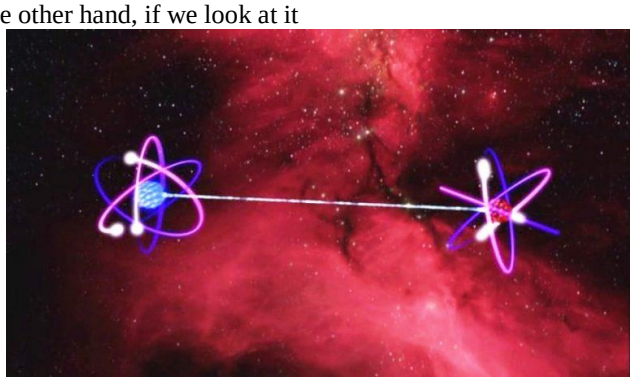
However, since every object in 3-dimensional space has mass, a hole will form around everything, and it is impossible to imagine these holes in 3-dimensional space. From this point of view, A. Einstein came to the conclusion that this piece of space-time exists in higher spaces (4-dimensional space). We will return to this phenomenon in detail.

Theory building. As can be seen, since the final theory contains the mechanism of all interactions, based on the fact that the space-time fragment exists in high-dimensional spaces, it is clear that the existence of multidimensional spaces will be used in this matter. Therefore, we need to clarify how many dimensions of space we can use in the final theory of the Universe. According to Michio Kaku, an American physicist of Japanese origin, when we reach 12-dimensional space from multidimensional spaces, strange results are obtained. Thus, in 12-dimensional space, the concept of two times for one object appears. In 13-dimensional space, things become almost meaningless. Therefore, 11-dimensional space is taken as the limit space boundary. It should be noted that the human brain can only fully perceive 3-dimensional space. That is, a person can only imagine and analyze any event that exists in 3-dimensional space. From this point of view, in order for his theory to be of high quality, it would be a more logical direction to complete the 3-dimensional space part of M-theory. The theory that embodies all the characteristics of the main direction here is the theory of "Quantum Large Scale". This theory is based on the fact that large-scale events can be fully explained by connecting the laws of quantum physics, which fully explain the properties of the microworld, with string theory. For this, it is necessary to fully characterize 3-dimensional space with string theory. First, it is necessary to determine some properties of strings. It is noted that the 3-dimensional space we live in, as well as the entire Universe, was created as a result of the Big Bang. With the creation of the Universe, the concepts of time and space began to emerge at the same time, and matter expanded and formed from that point. Therefore, matter and the physical field, which are the manifestations of matter, have the same source. This source is clearly the smallest particle that exists. Therefore, this particle must combine the properties of both matter and the physical field. Strings also have this property. Matter as a whole is composed of strings. On the other hand, we know that energy is the most important quantity in the Universe. That is, we can say that matter is built entirely on a single energy. The single energy causes these strings to vibrate at a certain frequency. The various forms of energy that we observe in the Universe are actually different manifestations of the single energy. The existence of different forms of energy gives rise to the fact that strings vibrate in different ways. The vibration of strings in different ways creates different physical fields, and the combination of strings vibrating in different ways creates the corresponding particles. Different combinations produce different particles, different particles produce different atoms, different atoms produce different substances, and different substances produce the richness of the Universe.

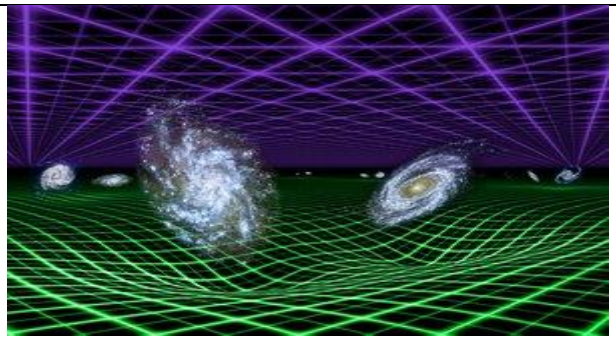


To understand why strings do not vibrate in the same way, we need to introduce the concept of "semi-strings". Since there is a concept of 3 directions of motion in 3-dimensional space, we can say that these semi-strings can move in different directions. As a result of the interaction of semi-strings with the same direction, energy exchange occurs, and vibrational forms of the corresponding frequency arise. Since less energy is required for the combination of strings with the same vibrational forms, only strings with the same shape can combine in a very short time. The combination and separation of strings by vibrating in different ways leads to changes in the properties of elementary particles. Strings have mass and their mass is $1{,}42 \cdot 10^{-84}$ kq This much has been calculated. There are approximately $7.03 \cdot 10^{136}$ strings in the universe, and this number continues to increase. To form an elementary particle like

an electron, approximately $6.4 \cdot 10^{53}$ strings must be combined. It has been determined that quantum mechanical phenomena in the microworld can be fully explained qualitatively and quantitatively using these string parameters.Let us emphasize once again that the properties of the microworld are very strange. It becomes clear that the laws of classical mechanics become completely useless here. Therefore, the search for a final theory was considered by some scientists as a futile search. Starting from particles and moving towards larger objects, the laws of motion change from quantum mechanics to classical mechanics. So, at a certain point, a transition from quantum mechanics to classical mechanics occurs. The goal is to find what this converter is. The main difficulty in finding this converter is the strange processes in the microworld. Thus, microparticles, despite combining wave and particle properties in themselves, behave neither as waves nor as particles. Because, the wave and particle picture are compatible in some cases, and in some cases they are not. The properties of microparticles are so unique that we cannot find a suitable example for microparticles. In classical mechanics, the state of a material point is characterized by its position (coordinates) and momentum at each instant of time. Real microparticles are more complex objects in this respect. Thus, it is impossible to accurately determine its position and momentum at the same time to characterize the instantaneous state of a microparticle. The reason for this is that each particle has both corpuscular and wave properties. Therefore, we cannot say anything about where the particle will be after a certain time t. This is the uncertainty principle given by Heisenberg in 1927. In simple terms, if we consider a particle as a wave, the wave has a certain propagation speed.However, waves do not occupy a local place in space. Therefore, it is impossible to determine its coordinates. On the other hand, if we look at it as a particle, it will have a specific location in space at any given time. However, it will be very difficult to determine the speed of the particle during this journey. Therefore, if the coordinates of the particle are known, the speed of movement is uncertain and vice versa ($\Delta x \cdot \Delta P = h$). The main reason for this picture is that we look at the particle as a particle-wave dualism. In fact, particles are not like anything we have seen before. That is, particles made of strings can sometimes exhibit wave properties and sometimes particle properties. However, it would not be correct to say that they are exactly like them. In short, if it were possible to accurately determine the material of the particle, this principle would not work. On the other hand, it can be said that we encounter this picture because we do not know the initial coordinates of the particle. Moreover, at the same time, we are trying to study a microworld through macrodevices. Of course, such a factor plays a major role in the creation of this picture. Although we do not take into account the importance of errors for large objects, this fact is of great importance for small-sized objects. In reality, in 3-dimensional space, each particle has each of these parameters at the same time. Another problem is the phenomenon of quantum entanglement that occurs between particles. Let's touch on the essence of this phenomenon, which was awarded the Nobel Prize in 2022. According to this theory, two substances or objects that are created at the same time or from the same source are in a state of continuous entanglement with each other. In the simplest definition, quantum entanglement is the inextricably linked nature of two objects and, when one is disturbed, the other is disturbed, regardless of the distance between them. Until now, the speed of light has been considered the limit speed in the Universe.



Note that here the interaction is transmitted through string theory. Since all strings vibrate at the expense of a single energy, as we have noted, they are all connected to each other. Then we prove that particles interact with each other regardless of distance. It was the discovery of the phenomenon of quantum entanglement that once again confirmed this fact. Therefore, the speed of energy transfer in a string network can be considered the maximum speed of the transmission of interaction, and this speed will be the limiting speed of the Universe. This speed can be determined according to the formula $V^*=S/t$ ($t=232 \cdot 10^{-18}$ seconds, t-found from experiment). As can be seen, the correct approach to string theory can fully explain micro-events. However, in order to complete the final theory, the Quantum Large Scale Theory supports the fact that it is necessary to apply this approximation to the explanation of phenomena in space. Let us turn to the explanation of these phenomena. We noted above that A. Einstein concluded that the gravitational field exists in 4-dimensional space. In fact, it can be noted that the bending of this material does not depend on the properties of objects, but only on their masses.



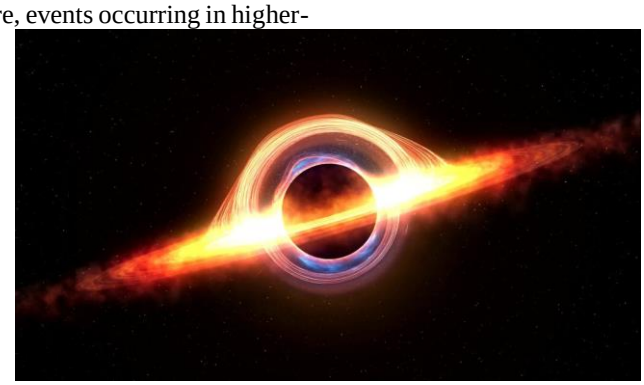
Celestial bodies were distributed in phase according to a certain law depending on their masses and the distance between them. Because, although all the bodies existing in the Universe have different properties in different places, they are a manifestation of a single energy. This fact requires that there be a certain law for their distribution in space for celestial bodies in particular. This distribution will depend on the masses of celestial bodies and the distance between them. The quantity that connects these two parameters is potential. In order for celestial bodies to be in equilibrium, their potentials should not differ in terms of energy.

$$X=M_1/R_1=M_2/R_2=\ldots\ldots=M_n/R_n \quad (1)$$

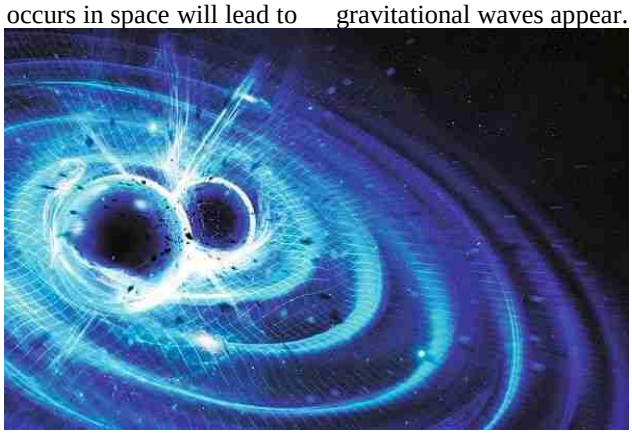
Here X~ $1.015 \cdot 10^{18}$ kg/m is calculated. As we have mentioned, the result obtained from the general theory of relativity affects the effect of motion in space on time. Everything in the existing 3-dimensional space is human energy. The existing unit energy looks at the shape of 3-dimensional space. The combination of an infinite number of 3-dimensional spaces creates 4-dimensional space. Therefore, events occurring in higher-level spaces have an effect on our space. In fact, all objects existing in the Universe have motion. Motion, in turn, causes the flow of time. This can be expressed mathematically as:

$$\text{Time} = \text{Space}/\text{Motion} \quad (2)$$

Since the goal is to explain the phenomena occurring in 3-dimensional space with string theory, we will use the concept of a string network instead of a single energy expression. In the section on quantum entanglement, we mentioned the method of calculating the speed limit of the Universe, that is, the speed of energy transfer between strings V*. If the energy of any object, due to the additional energy provided from external spaces, is greater than the total energy of the strings that form it, that object can exceed 3-dimensional space. Knowing the relationship between energy and speed, the same approach can be said for the speed difference. During this transition, a defect will be created in the spatial network. Black holes are actually defects created in space.

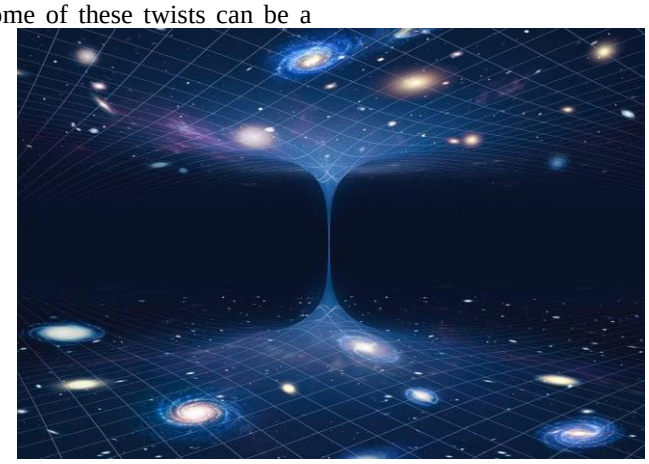


Through them, interspatial matter flows. These defects mainly appear during "astronomical disasters". It is clear that any defect that occurs in space will lead to a defect in time in that part. As a result of these defects, fluctuations occur in the space-time fragment, and thus gravitational waves appear.

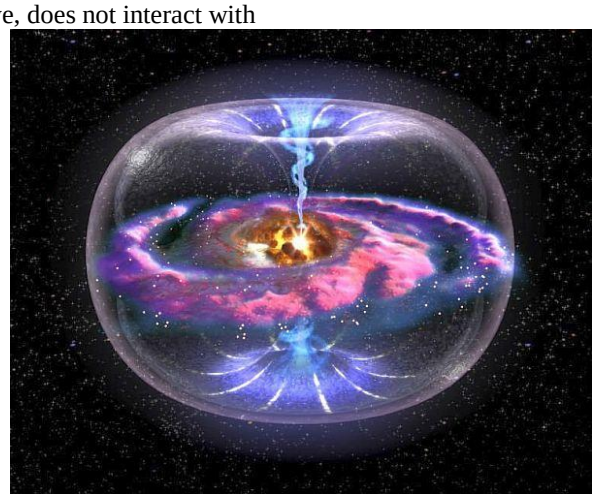


Based on these facts, we can call black holes the pillars of the Universe. It can be said that the location of black holes in space in accordance with a certain law of the masses and distances between them plays a key role in the stability of the Universe. Another result of the general theory of relativity is the existence of cosmic tunnels. Through cosmic tunnels, it is possible to travel to greater distances in the Universe in a short

time. When the energy released during "astronomical disasters" cannot create defects, it is spent on twisting the space-time fabric. Some of these twists can be a means of creating cosmic tunnels. The greater this energy, the greater the length of the tunnel.



If we could artificially create the necessary energy, we could create a space tunnel and travel long distances with it. The most accurate approach to obtaining this energy has already been found. Black holes are mainly located in the centers of galaxies. It is precisely due to the effect of this defect that anomalies are observed in the speed of movement of the galaxy. Calculations show that for such a movement to occur, there must be more mass in the galaxy than the sum of the masses of the stars. Since this substance cannot be observed, it was called dark matter. Dark matter is a substance that is invisible to the eye, does not interact with electromagnetic waves, and whose existence is determined only by its effect on other substances. Dark matter is clearly manifested in the interaction of gravity. Then it can be said that dark matter exists in 4-dimensional space as a gravitational field. From this relationship, we can conclude that dark matter is the creator of the gravitational field. That is, it is the reason for its existence. Through a black hole, dark matter shows its effect in our space more clearly. Since these transitions are constant, it becomes clearer to understand why the Universe is expanding.



Results. As can be seen from the theory of quantum large-scale measurements, important conclusions are drawn. The universe is built on a single energy and the 3-dimensional space part of the universe is made up of a network of strings. The final energy of the universe is equal to the sum of the energies of all strings. In 3-dimensional space, each particle, as well as strings, has mass, shape and size, and at the same time, everything is in motion. Every particle in the universe is connected to each other. There is no instantaneous event, that is, for any event to occur, at least a very small amount of time must pass. Because, the space-time fragment exists in large-dimensional spaces and this fragment is connected to dark matter. The limiting speed of the universe is the speed of energy transmission in the strings, and this speed can be calculated approximately. It turns out that black holes are defects formed in space and they play the role of pillars of the universe. Due to these defects, the effect of dark matter on our space becomes greater and the Universe expands by gaining additional mass. The presence of these defects leads to the presence of defects in time. That is, the Quantum Large Scale theory says that time travel can exist. This theory says that cosmic tunnels can be created by artificially creating a large energy level. The entire Quantum Large Scale theory, in which an infinite number of 3-dimensional spaces participate in the creation of 4-dimensional space, does not deny the possibility of parallel Universes. Again, the idea of splitting an object into a string wave with a high energy level and reuniting it at a very high speed to another place is no longer unusual. Thus, the Quantum Large Scale Theory states that Teleportation can exist. In order to realize such magnificent events, it will be necessary to establish the equation of the Universe between all the important quantities characterizing the 3-dimensional space and the unified energy of the Universe. The Quantum Large

Scale Theory is one of the theories that serves to establish this equation. Finally, let us note that it may be possible to complete the 3-dimensional space part of the M-theory by taking into account the important facts obtained from this theory. When this theory is completed, the secret of creation will already be clear.

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