Quantum of time as the main element of all fundamental interactions. Unravel the mystery of time and manage the present time.

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If you think about what is the most valuable thing in life, then many will say that time. Your own time. And understanding its value also relate to other people's time. "Time is money" - these words came from America, the slogan of business people. But the truth of these words was intuitively felt by people of all countries, from ancient times. Some scientists argue that time is being itself, life itself. And the value of these categories is beyond doubt.

And many of the actions of people are based on competition for the possession of this value - time. So in chess battles, the main recipe for success is to build up the pace. There is even such a chess expression: “to sacrifice a piece for the sake of tempo”. And the masters of this game, for the sake of gaining time, sacrifice any of their pieces, even such valuable pieces as the queen. In real battles, this principle is even more pronounced. The main law of war says: "Whoever wins time will win the war." And for the sake of gaining time, the lives of real people are sacrificed, and equipment worth billions of dollars burns in a flame.

Here it is natural to ask the question: “How to get more of this value?”

Does time have a standard, a hard currency, real units of time - not invented by man, but inherent in time itself?

By increasing or decreasing their number, one could increase or decrease one's own time.

Here we come to one big discrepancy. Between the importance of the question under study - what is time? And what we know about time. The most logical explanation for this is that it is difficult to isolate the object of study itself. The observer and his observation devices are in time, and are inextricably linked with the object of study - time. It is well known that the picture is most clearly visible from the side. And the more a person is involved in some process, the more difficult it is for him to understand what's what, what elements are involved in the process, and what properties they have. But we managed to find one method to separate ourselves from time itself and look at it from the outside. And understand what this thing is, and how to deal with it. What is the meaning of the power of time over us and everything around us. And how you can **manage** time, increase or decrease its amount.

Something similar happened two thousand years ago. History has not preserved the method that people used to get that fantastic result, the fruits of which we all enjoy. And which determined the whole face of modern civilization - smartphones and computers, rockets and planes, cars and trains on a magnetic cushion.

The whole world consists of atoms and emptiness, - said Democritus and his followers. Which completely contradicted then, and contradicts now the obvious observation of the surrounding world. All objects look solid, without voids, and this is confirmed by all the senses: from touching objects to their image. But logic required a different approach in order to explain the world as it is. She showed that the idea that all objects are solid is **redundant**. And the idea of separate portions of matter and empty spaces between them **really** reflects reality.

But it turned out that the principle of separate portions of matter and the gaps between them is only a manifestation of a more fundamental law that governs time. If you disconnect with time and look at it from the outside, it turns out that this is not a continuous, continuous dimension that envelops the whole world, and carries it in a stormy stream to no one knows where. It turns out that there are two types of time: Absolute time, and proper time. Own time of each person, tree, stone and all surrounding objects. Proper time appears because each object has a certain number of portions of the Absolute time and empty spaces between them. And Absolute time appears in its most concentrated manifestation — as existence itself. The intervals between portions of Absolute Time masked the true properties of time. Having discarded empty intervals, we learn the real laws of time.

1) Time all over the world flows **consistently**. 2) The total amount of time **is limited** and is a

constant. And the whole movement of the world, various processes are only the redistribution of time between different objects. And the goal of any object is understandable and natural - to resubordinate as much time as possible to itself, to prolong its existence. This is clearly seen in wildlife, the competition of living organisms.

All this can be seen, and even accurately measured, if you find the basis of existence, the most elementary brick of being - the quantum of time. It is a portion of Absolute time. Indivisible and permanent. And this is not just a theoretical abstraction. Further there will be absolutely specific numerical properties of this quantum of time. And how, concretely and definitely, this quantum of time creates our diverse and unpredictable world. It will be shown how a person, each material object **has its own time** - how a quantum of time appears in this object, with what frequency, and how empty gaps are formed between these appearances **when nothing happens**. And it will be shown how you can increase the amount of Absolute time in the object, **increase the amount of being**.

Surprisingly, the question that proper time of objects consists of Absolute time and empty intervals between them has not been given sufficient attention. After all, nature screams about it at the top of its voice. It is only necessary to remove the filter of banal ideas about the world that have stuck to us since childhood, and which, due to seeming obviousness, have not been analyzed. And hear the song of reality that nature sings. It is a well-known fact that at object speeds close to the speed of light, the mass of the object increases, while the linear dimensions and time decrease. Time slows down. The fact that the size of the object is decreasing is not surprising. After all, an object consists of atoms and empty spaces between them. There is room for the substance to decrease, shrink - just reduce the gaps between atoms. But time is also decreasing. And this clearly shows that time has a structure. Consists of smaller parts. From the actual time and the empty gaps between the particles of time. And this makes it possible for time to change: to increase and decrease, due to empty intervals. And it would be most logical to assume that the basic element of time is some smallest portion, a quantum of time. And the proper time of each object consists of cyclic appearances of this quantum of time and intervals between them.

Yes, strange as it may seem at first glance, the idea that time flows continuously in objects is **redundant**. And the fact that each object actually exists intermittently, and not continuously, is necessary and sufficient for this object to exist as we observe it in nature. According to the real laws of physics. At the same time, many scientific facts and paradoxes, such as corpuscular-wave dualism, line up in one logical chain. It is enough to recognize the real fact that time throughout the world flows **sequentially**, and that all objects exist discontinuously, and there will be no need for such phantoms as multiple worlds and virtual particles. The embodiment of these mathematical illusions, Schrödinger's cat, will cease to suffer. Who does not know whether he is, or whether he is not. Let's free the cat from Schrödinger! And this alone is enough to carefully consider this information. If you like these beauties even a little bit.

And **most importantly** , practical experiments on this theory will be demonstrated here. That is, the phenomena of the real world will be considered. These will be very visual and simple experiments. Which anyone can repeat. Check this information in practice. The document in the file will describe in detail the manifestation of the properties of Absolute Time in real life. At the beginning there will be content. And according to the content, you can immediately go to the chapter of experimental confirmation of this theory.

If you want to know all the secrets of time, then a short story awaits you. And it will take quite a bit **of time**.

First, the question - Is it possible to build a working Universe from two elements? Answer - You can. If two elements are called: certainty and the sphere of probability.

Let me suggest a way to save time. There will be some formulas in this text. These formulas are very simple. But they are. Therefore, I propose an option to reduce the time, but at the same time get new information. To do this, you can first view the pictures. And something to read diagonally. To have a general idea of what is being said in the text. The final part will be about how this can be applied in practice. What is useful in all this.

Content

Electromagnetic wave - what is it really?

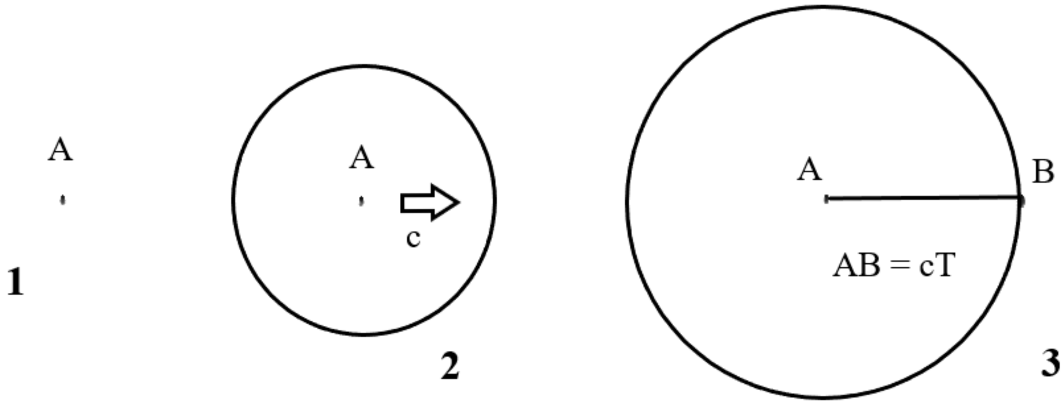

Figure 1. The cyclic appearance of certainty on the spheres of probability, like an electromagnetic wave.

1) There is an empty space. And in it, at some point in time, a point appears at point A. Specifically, this is a ball with a diameter d. We will consider the value of d a little later. This ball exists at this one point A time t (we will also talk about its size). To begin with, let's say that this time is very short. 2) After that, this ball disappears without a trace. But instead of a ball at point A, another phenomenon appears. This is a sphere. And it begins to expand at the speed of light in vacuum c. And so it expands in a period of time T. By this time, the radius of the sphere R is equal to the product of the speed of light c by a period of time T. R=cT.

3) Next, on the surface of this sphere, at point B, the same ball with diameter d appears. There is a time t at this point B. And disappears again. That is, point 1 is repeated. Where in this gap was this ball is an important and interesting question. And we will definitely explore it. 4) In place of the disappeared ball, at point B, a **new** sphere appears and begins to expand at the same speed c. That is, point 2 is repeated. But the important point in this process - the ball that appears and disappears - is the same. And the sphere that appears every time is **new**. It is also important to note that the previous sphere **never** disappears, and continues to expand at a rate of c. Also, with the speed c, the new, second sphere expands. After the same time T, the second sphere will have the same radius R. 5) A ball appears on the second sphere, at point C, there is a time t. And disappears. 6) At this place, at point C, a third sphere appears. Which, like the previous two, begins to expand at a speed c. Those. there is an identical cycle of two stages: 1) a ball appears on the surface of the sphere, and the time t exists there. And disappears. 2) A sphere appears in its place, which expands at a speed c. And the expansion lasts a period of time T.

Then point 1 is repeated - the next cycle.

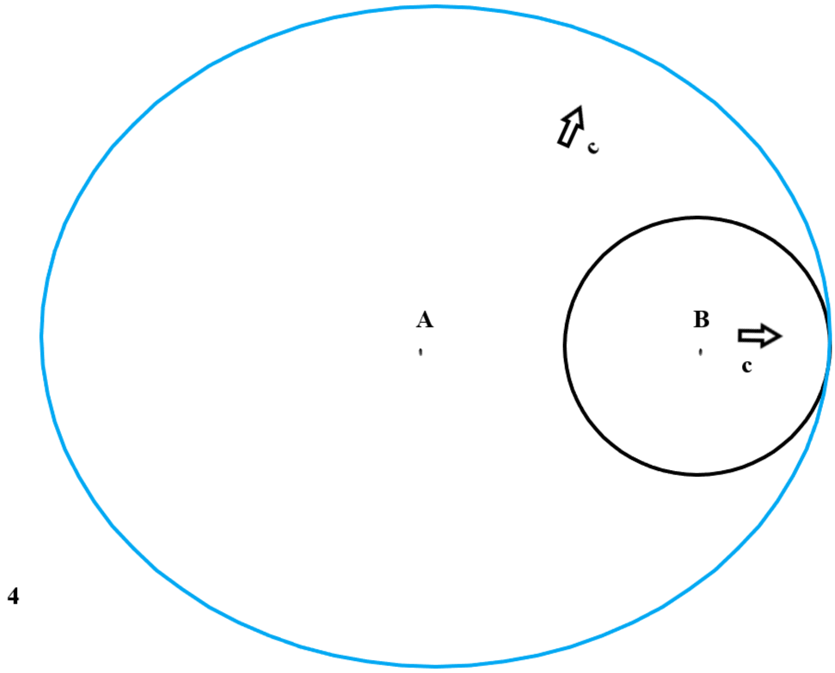

Figure 2. Electromagnetic wave, continued.

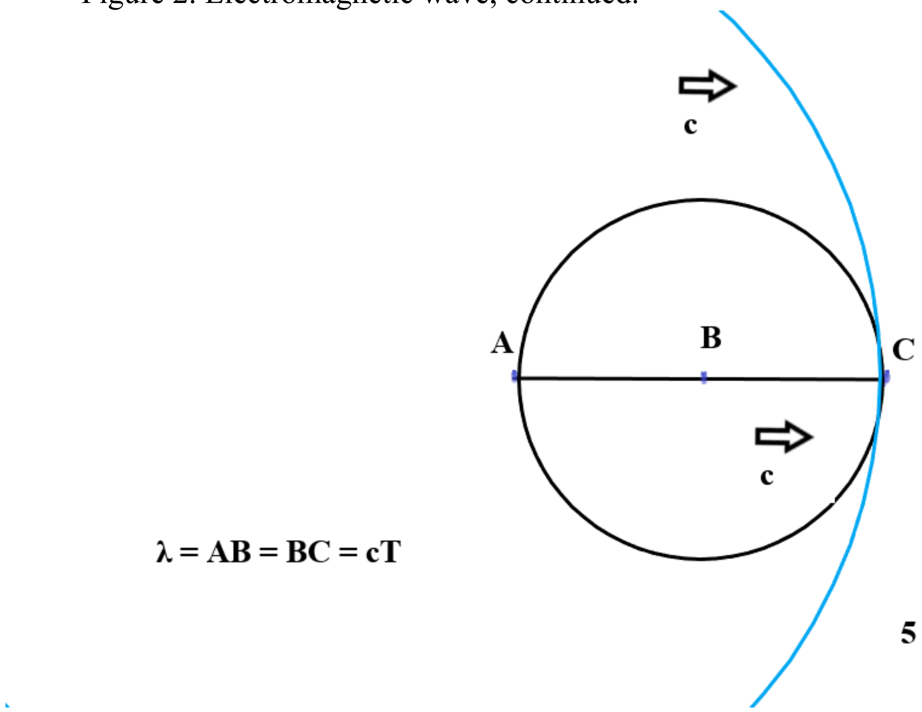

Figure 3. Electromagnetic wave, continued.

Properties of certainty and the sphere of probability.

Let's add information to the picture. The ball will be called certainty. And here are its properties. There are only two of them: 1) it has one constant size - diameter d; 2) it exists in one place for a strictly defined and identical time t.

The sphere is called the sphere of probability.

Properties of the sphere of probability: 1) it appears in the place where the ball was before -

certainty. Appears strictly at the next moment of time after the disappearance of the ball there - certainty; 2) the sphere of probability is expanding constantly and continuously. And always strictly at the speed of light c. 3) When the radius of the sphere of probability is equal to the radius of the previous sphere of probability, a ball will appear on its surface - certainty; 4) And after certainty appeared and disappeared on its surface, the sphere of probability also continues to expand; 5) certainty must necessarily appear on its surface only once - approximately after the same time T as in the previous sphere of probability. Further, the sphere of probability simply expands at a rate of c.

Now let's assume that this whole process is nothing but an electromagnetic wave. Or if in the visible range, then light. The speed c of the expansion of the sphere of probability is the speed of light in vacuum c. The radius of the sphere of probability is the length λ of the electromagnetic wave. The time between occurrences of certainty T is the period of the electromagnetic wave. The frequency of the electromagnetic wave ν is the reciprocal of the period, and we will have a specific value - the number of occurrences of certainty per unit of time. For example, the frequency of a red light wave is $4.2 \cdot 10^{14}$ Hertz. In one second, certainty will appear 420 million million times in this wave. In Figure 3, the line ABC is the trajectory of the electromagnetic wave. But in our system, points A, B and C are places where certainty appeared. Therefore, it would be logical to call the line ABC the trajectory of movement of certainty in the given electromagnetic wave.

The proper time red light wave will consist of $4.2 \cdot 10^{14}$ occurrences of Absolute Time per second. When this wave **exists**. And empty spaces **when nothing happens**. Blank gaps are $2.38 \cdot 10^{-15}$ seconds long. But since the size of the empty intervals is very small, then with the periodic appearance of the Absolute time, an **illusion**that this wave exists **constantly**. Just as when scrolling through individual photographic frames, the illusion of continuous action is created on a movie screen. Only in order to understand the essence of what is happening, it is enough for the cinema to slow down time by 24 times. And then it will be seen how frames change once per second. For a wave of red color, time dilation is 10^{15} times. And it's much more difficult.

On the one hand, where are the electromagnetic waves, and where is this rather abstract picture. On the other hand... Electromagnetic waves are well studied and described mathematically. These formulas are very accurate. But what exactly happens in an electromagnetic wave? What does it consist of? There is no answer here. And there is space and need for logical constructions to clarify these fundamental questions.

Now, having called something an electromagnetic wave, let's see if it behaves like an electromagnetic wave. And most importantly, is it possible to learn new properties of an electromagnetic wave, and to predict new phenomena, which could then be objectively confirmed.

Splitting a beam of light into a spectrum. New interpretation of Newton's experience.

The first directions in the study of light, the visible electromagnetic wave, were the splitting of a beam of light into a spectrum. Recall the famous experiment of Newton, where he first directed a beam of light onto a glass prism and at the output received a beam already split into a spectrum.

Figure 4. Newton's experiment on light dispersion.

Consider this experience from the standpoint of certainty and spheres of probability. Depending on the wavelength, they will behave differently. We remember that the rate of expansion of the sphere of probability is always the **same** and equal to the speed of light in vacuum. Therefore, the wave speed will be the **same**, but the trajectory will be **different**. For all waves, the trajectory will be ABC. According to Figure 5, the shorter the wavelength λ, the stronger the wave will go around the atoms of the substance. As in Newton's experiment, these are glass atoms. $\lambda3<\lambda2<\lambda1$. It can be imagined that for a given wavelength λ, the angle by which the wave will deviate from rectilinear motion will be equal to β. And the smaller the wavelength, the larger the angle β, because the more the wave has to go around the atoms of the substance. Then the trajectory of the wave in the substance will be the greater, the larger the angle β.

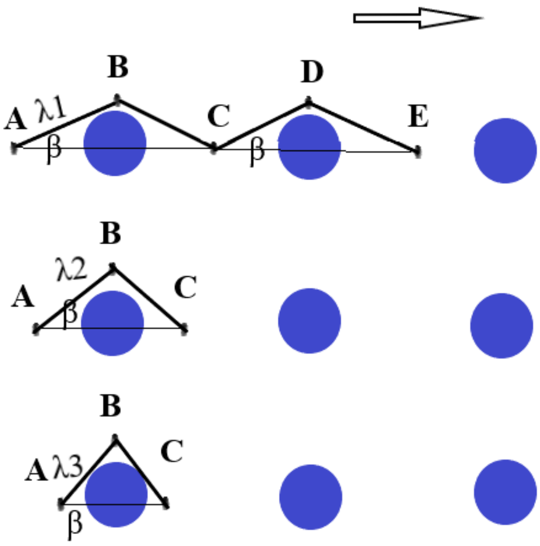

Figure 5. The trajectory of the appearance of certainty in an electromagnetic wave when moving through glass. Dependence of the trajectory length on the electromagnetic wave length. Angles arising when an electromagnetic wave bends around glass atoms.

Anyone can find an analogy in their own experience. It's one thing to run straight along a forest path. Another is to run around the trees. Even if you run at the same speed, it is clear that the trail runner will run faster. Because the trajectory of the runner through the forest will be much larger.

This is exactly what we saw in Newton's experiment - the longest wavelength of light - red - is the least deflected when passing through glass. And the waves with the smallest wave - purple - deviate the most.

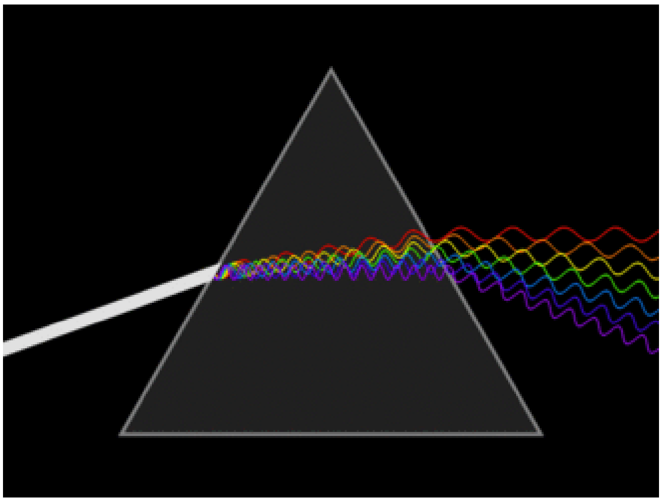

Figure 6. Dispersion of the light beam.

Now consider the case when the wave of light is the same, but the medium for the passage of light is different. For example, water, glass. Obviously, the larger the gaps between atoms, the smaller the curvature of the light wave trajectory. And the denser the atoms in the substance, the stronger the light has to go around obstacles - the larger the angle β, and the longer the trajectory that the light overcomes. That is, the main postulate also applies here - light **always** moves at the speed of light in a vacuum. And it only increases the trajectory, bending around the atoms of matter on its way. And the fact that it is said that light in different media changes its speed reflects only a change in the trajectory of the movement of light - the trajectory of the movement of certainty in a given electromagnetic wave.

I would like to make this point. On the one hand, the simplification of the laws that explain natural phenomena is the ideal of physics. The truth is in simplicity. On the other hand, there are some difficulties in the perception of information. There are only two participants in our picture of the world. Certainty and the sphere of probability. And their combination gives all the diversity of the world. But when describing the world, now only these terms have to be used. And when two words are often used, it is harder for perception to hold the thread of meaning. All processes involving certainty and spheres of probability are simple and illustrative. You just need to relax and follow the logic of events.

Electron as a trajectory for the emergence of certainty.

Let's now conduct a thought experiment, and close the trajectory of the electromagnetic wave in a ring. Similarly, certainty will appear on the surface of the sphere of probability and disappear. Then a new sphere of probability will appear in this place, and will expand at the speed of light. The same as with an electromagnetic wave, but the trajectory will close into a circle. Now imagine that this circular path is a gymnastic hoop. Put it on the floor and spin it vertically. That is, the electromagnetic wave will move in a circle. Plus, this circle itself will rotate around its axis.

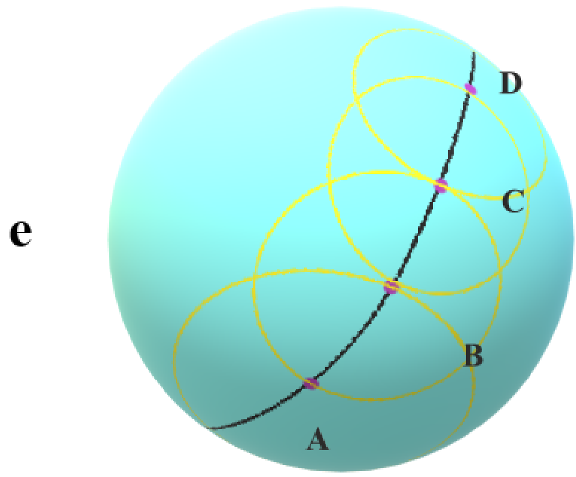

Figure 7. Circular trajectory of the emergence of certainty in the electron.

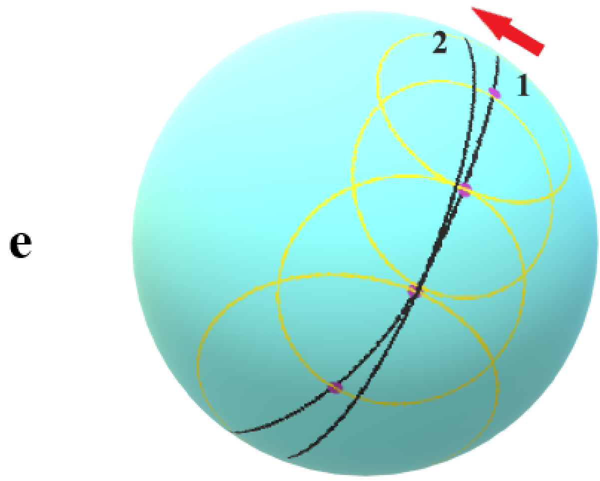

Figure 8. Rotation of the circular trajectory of the appearance of certainty in the electron around its axis.

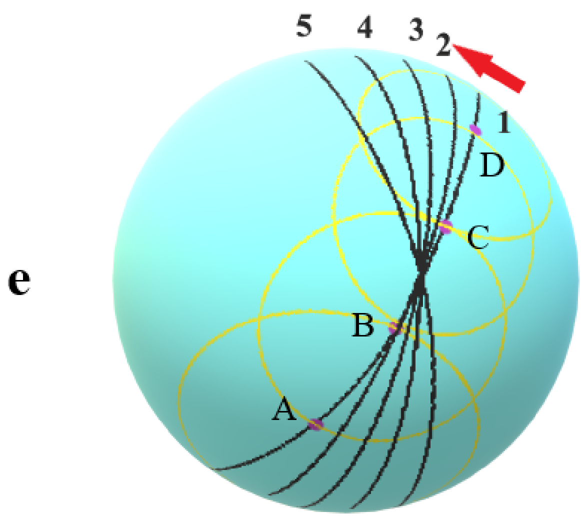

Figure 9. Rotation of the circular trajectory of the appearance of certainty in an electron

around its axis. Continuation. The ball of an electron is a trajectory of movement of certainty.

In fact, we are now witnessing neither more nor less, but the birth of matter. The transformation of energy - light into matter. Because as a result we will get nothing but an electron - an elementary particle. It also: 1) emits spheres of probability, 2) travels at the speed of light. But the difference is that its trajectory is closed in a ring, and the ring itself also rotates around its own axis.

Thus, the trajectory of motion of certainty in the electron describes the ball. This ball, the trajectory of motion of certainty, is a circular orbit rotating around its axis, and is an electron. An analogy can be made. The trajectory of the appearance of certainty in an electron is a thread. A ball of thread, a ball is the general trajectory of movement of definiteness in an electron. A ball of thread is the electron itself.

Specific values of the number of occurrences of certainty in an electron, the radius of the sphere of probability of an electron, the time between the appearance of certainty in an electron.

And the electron has the same characteristics as the light, the electromagnetic wave - the time T between occurrences of certainty. And the distance between two successive occurrences of certainty R. $R = cT$. Regarding the electromagnetic wave, everything is simple - there is a wavelength, in radio receivers you can even see its exact value - the FM length on which this or that radio station broadcasts. This length corresponds to the frequency of this wave ν - the number of waves in one second. Or the wave period is the reciprocal of ν: $T = 1/\nu$ is the duration of this electromagnetic wave in seconds. For visible light, it is 10^{-14} powers of a second.

What can be said about the wavelength of an electron, or about its frequency? To do this, we use the Planck formula for energy: $E = h\nu$, where E is the energy of an electromagnetic wave; ν is its frequency; and h is Planck's constant.

And Einstein's formula for energy $E = mc^2$, where E is the total energy of the object, m is its mass, c is the speed of light in vacuum. Combining these two formulas, we obtain the value of the frequency for the electron: $\nu = mc^2/h$, where m is the mass of the electron. The rest mass of an electron is 9.1 10^{-31} kg. Hence, based on this formula, the frequency of the electron is $\nu = 1.25\ 10^{2o}$ Hertz. That is, at rest, an electron emits 1.25 10^{2o} probability spheres per second. The time between two occurrences of certainty in an electron is $T = 1/\nu$ and equals $8 \cdot 10^{-21}$ seconds. And the distance between two successive appearances of certainty in an electron (the radius of the electron's probability sphere) is $R = 2.43 \cdot 10^{-12}$ meters.

The proper time of an electron will consist of $1.25 \cdot 10^{2o}$ occurrences of Absolute time per second. When this electron exists. And empty spaces when nothing happens. Blank gaps $8 \cdot 10^{-21}$ seconds long.

By the way, my dear reader, now you have information that no one knew before. What is an electron? How does it move in orbits in an atom? And even how does a free electron move? And how it combines both wave and corpuscular properties. To put it bluntly, physics is now unable to answer these questions. There are magnificent and indisputable formulas describing the electron and its motion. But physics cannot yet show what is behind these formulas. It has not yet been possible to draw a coherent and logically consistent picture. As always in such cases, in order to explain and combine phenomena with opposite properties, one must go to a higher level. So that such objects and their interactions would appear at this level, which would include and explain the phenomena from the lower levels.

So, we have an electron, shown from the perspective of the interaction of such objects as certainty and the sphere of probability. There are also quantitative figures for these phenomena. Can we explain from these positions where the electron gets an electric charge, how it generates an electric field, and how an electron, unlike light, has a mass. Certainty and the scope of probability provide answers to these questions. Moreover, all this is shown only through one thing - simple Euclidean geometry. That is, there is no need to take anything on faith, no theories. Anyone can check every single word with the help of geometry. And geometry studies exclusively material objects - that is, objective reality.

It is important to note that all electrons move in parallel, that is, their circular orbits rotate around their axis synchronously, in parallel. True, there is one point, which will be discussed a little later. For now, we will assume that the orbits of all electrons are strictly parallel.

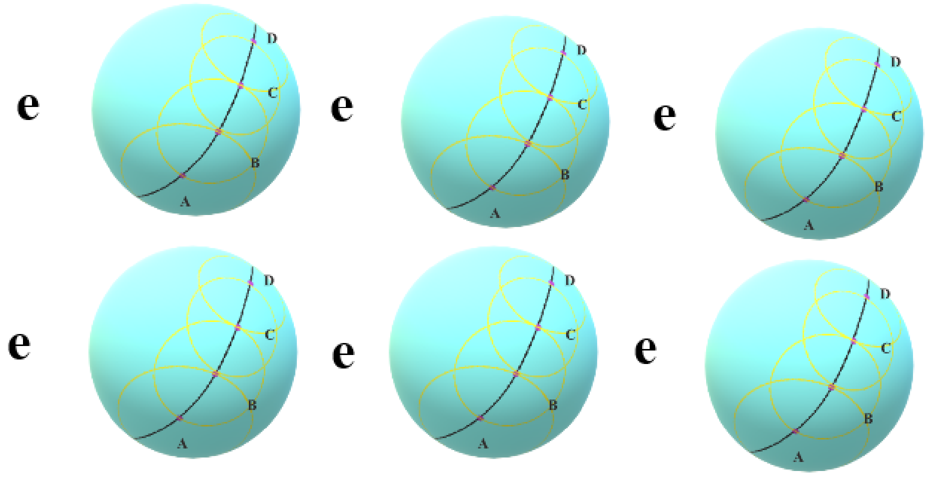

Figure 10. Parallel rotation of circular orbits of the appearance of certainty in all electrons.

Neutron as a trajectory of the appearance of certainty in the form of a ball. Displacement of the circular orbit of the neutron by 90 degrees with respect to the electron. Specific meanings of the appearance of certainty in the neutron.

Now let's take and rotate the circular orbit of motion of certainty by 90 degrees with respect to the electron. As a result, we have now obtained such an elementary particle as the neutron. We can also measure all the main characteristics of it - frequency, period, wavelength. It is known that the mass of a neutron is 1838 times greater than the mass of an electron. From the same formula $\nu = mc^2/h$ we obtain the frequency of a neutron with a rest mass m. The number of probability spheres that a neutron emits will be equal to 2.3 10^{23} probability spheres per second. The period of time between two successive appearances of certainty in the neutron is $T = 1/\nu = 4.35 \cdot 10^{-24}$ seconds. The wavelength of the neutron, the distance between occurrences of certainty in the neutron is $R = 1.32 \cdot 10^{-15}$ meters.

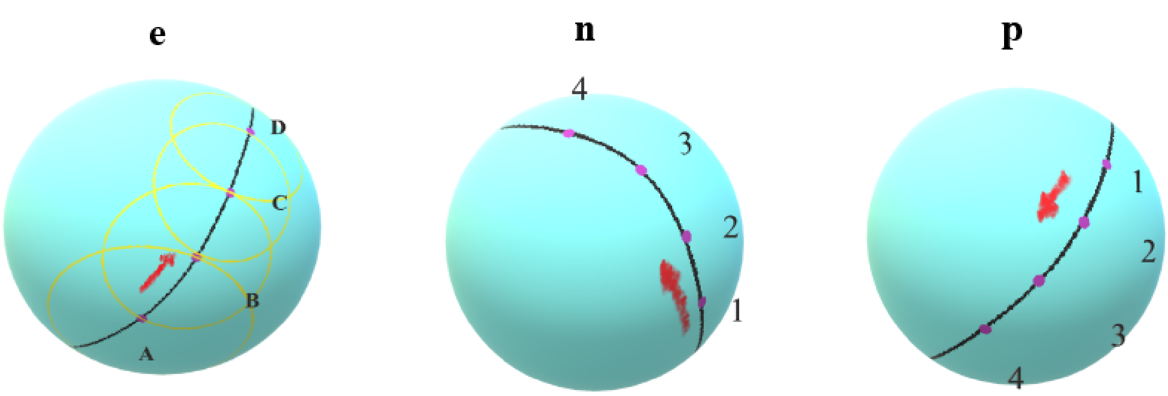

Figure 11. Displacement of circular orbits of appearance of definiteness in electron, neutron

and proton relative to each other.

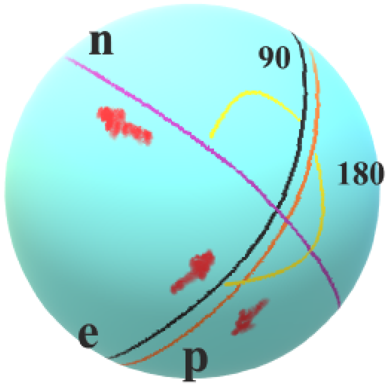

Figure 12. Displacement of circular orbits of the occurrence of certainty in the electron e, neutron n and proton p relative to each other on the example of a combined ball.

Comparing the values of the electron and neutron, it can be seen that the frequency of the neutron is 1838 times higher. This means that: 1) the neutron emits 1838 times more probability spheres. 2) The period T of the neutron is 1838 times less. 3) And so, the distance between two occurrences of certainty (wavelength R) is 1838 times less. From this it is obvious that the circular orbit of the neutron will be the same number of times smaller. We have already said that the trajectory of movement of certainty along a circular orbit, and orbits around its axis - this is an elementary particle. Thus, the size of this neutron ball is 1838 times smaller than the size of the electron ball. And for all elementary particles this rule works - the greater the mass of the particle, its energy, the smaller its size. This directly follows from the fact that with an increase in energy, the frequency of appearance of certainty in a particle increases, and the frequency of probability spheres emitted by it increases. And, therefore, the distance between the two occurrences of certainty in the particle decreases. And from this, all particle sizes also decrease.

This is the key to the paradox that physicists have encountered while studying elementary particles. From everyday experience it is clear that the greater the mass of a body, the greater its size. After all, matter needs additional space to fit there. And for elementary particles, the opposite is true - the larger their mass, the smaller their size. Because for elementary particles, additional energy appears through an increase in the number of occurrences of certainty in the particle. This is directly evidenced by the fundamental, repeatedly tested Planck formula $E = h\nu$. In it h is a constant, and it can be ignored. And without it, the equality between energy and frequency follows directly. Energy is the frequency, the frequency of appearance of certainty in an elementary particle. And with increasing frequency, the period of time between the appearance of certainty in the particle decreases, and the distance between the points of appearance of certainty decreases, the step of movement of certainty in the particle decreases.

As well as for electrons, the orbits of all neutrons rotate around their axis synchronously, their orbits are parallel to each other. And the angle between any electron and any neutron will be 90 degrees.

Proton as a trajectory of the appearance of certainty in the form of a ball. Displacement of the circular orbit of the proton by 180 degrees with respect to the electron. Specific meanings of the appearance of certainty in the proton.

Let's rotate the circular orbit another 90 degrees. And then our neutron smoothly turns into another elementary particle - a proton. The angle between the orbits of an electron and a proton is 180 degrees. That is, the movement of certainty along the orbit in the proton will always be in the opposite direction to the movement of certainty along the orbit in the electron. Maybe it has something to do with the electric forces between the electron and the proton? - you think. And you will be absolutely right. More on this a little later.

The orbits of all protons also rotate synchronously. And the movement of certainty along the orbit of each proton will be in the opposite direction to the movement of certainty along the orbit of each electron. The angle will be 180°. And between the orbits of any proton and neutron, the angle will be 90 °.

The mass of a proton is 1836 times greater than the mass of an electron. That is, it differs from the neutron mass by 2 units of the electron mass. We can say that the masses of the proton and neutron are approximately equal. And other parameters of the proton are approximately equal to the parameters of the neutron. The frequency, time period, wavelength, size of the ball of the proton and neutron are approximately the same.

Now we can generalize - any elementary particle is a movement (trajectory) of successive occurrences of certainty. In an electromagnetic wave, this is more or less rectilinear motion. In particles that have a rest mass, the trajectory is closed into a circle, and the circles themselves rotate around their axis. The important thing is that certainty moves along its trajectory in each particle always only at the speed of light in vacuum. The theory of relativity postulates that any movement can be no more than the speed of light. In our picture of the world, all true movement occurs **only** at the speed of light. The speed of light is the only speed at which everything moves. Just in one case, like an electromagnetic wave, this trajectory is straight. And in the case of particles, the trajectory is closed in a circle. And these particles remain practically in place.

On this occasion, it is interesting to compare the formula for kinetic energy $E = mv^2 / 2$. And the formula for the total energy is $E = mc^2$. From their comparison, it can be decided that in any physical body there is some kind of movement at the speed of light. And this amount of internal motion is the total energy E. One can imagine that a sling is constantly spinning inside. At the speed of light. And at some point, the stone flies out of the sling, and the internal energy turns into kinetic energy. In fact, all this is very similar to what is in reality. In each particle, certainty moves at a speed c. If, for example, an electron, under the influence of some physical or chemical processes, emits an electromagnetic wave. Then it flies out of it and moves in a straight line with a speed c. The total energy of the electron decreases by the amount of energy that the electromagnetic wave took with it. And, therefore, its frequency of occurrence of certainty decreases. But in the electron, the certainty still moves in a circle with a speed c.

The conclusion about the successive passage of time, as the only logically consistent version of the existence of time. The necessity of the existence of certainty due to the successive passage of time.

Let's now look at where certainty and the sphere of probability come from. 1) The world can logically exist only in one of two principles: a) everything exists simultaneously; b) everything exists sequentially. The obvious impression tells us that everything exists simultaneously. After all, we see, hear, feel the whole world around us at the same time. Everything around us - houses, cars, streets, trees, sky, stars - everything exists for us at the same time. But the same impressions tell us that the Earth is flat, and all things are continuous, without gaps.

1) But in order for the world to change, there was movement, and at least some interaction between objects, the only logical explanation can be that everything happens sequentially. In ancient Greece, there was no developed technology, scientific instruments. But the Greek

philosophers, on the basis of only logic, were able to substantiate the assertion that the Earth is a ball. And quite accurately calculated its dimensions. Also, on the basis of logic alone, and contrary to sensory experience, Democritus and his followers developed the atomic theory. Which from[15] those times to the present day is the only theory that explains the world from a scientific, materialistic point of view. And if we trace the history of science, then the turning points, the time of the greatest discoveries, occurred when obvious things were called into question, and the logical explanation of the studied phenomena won. It is important that in both cases, with a change in the **scale** objects being studied, the correctness of the logic is also confirmed by the senses. It is enough to rise up a little, enter the cosmic orbit, and the fact that the Earth is a ball becomes quite obvious. Also, electron microscopes give an obvious picture of the crystal lattice of a substance.

The same changes can be observed over time. If you slow down the movie by 24 times, then you can see that these are only **separate** frames, **sequentially** replacing each other 1 time per second. During normal viewing of the film, the illusion of continuously unfolding events is created.

2) If we accept the postulate that everything in the world happens sequentially, then the only logical solution for this would be the standardization of events. All events must be equal, identical. Otherwise, there will be a violation of symmetry, a skew of events in some direction. And imbalance, the system will be unstable. Therefore, a constant and indivisible portion of time is needed. A quantum of time is that period of time, less than which nothing exists. Those very smallest bricks that make up elementary particles, atoms, and all material bodies. Moreover, if earlier indivisible portions of matter — atoms — were used to explain the physical picture of the world. Then their constituent elementary particles. Then the basis of everything is a portion of time, and in its most concentrated sense - as a portion of being itself. That is, only these portions of time - certainty - are what exists. And everything else is periods of inactivity, intervals of emptiness. And if we put a portion of being as the basis of everything, then this approach looks the most fundamental. If we imagine that at the basis of everything there is a portion of something, then this something must also be the most indivisible, fundamental in terms of properties. For example, if we take some particle, substance, as the main indivisible object. Then it is subject to a bunch of other factors that are above it. For example, a particle has mass. Often an electrical charge. It is subject to time - it has some finite time of existence. Finally, it is subject to being - it exists or does not exist. If we take being itself as a basis, then it is above everything, not subject to anything, and does not depend on anything. It is intuitively felt that if a portion of being is taken as a fundamental basis, a brick, then this is close to the truth.

It is important to note that in the example with atoms, it is necessary to reduce the substance by millions of times so that the atoms can be fixed. They began to appear from seemingly solid physical bodies. In order for the quantum of time to appear, time must be reduced by a very, very large number of times. As with atoms, it's all about scale. And in a very, very short period of time, we will be able to manifest a quantum of time - certainty.

So, all particles consist of portions of being periodically appearing in them (when this particle exists). And empty intervals of time between these events. And all appearances of being occur sequentially. That is, if certainty appeared in some particular particle, for example, in some electron, then this quantum of time will be only in this electron. And in the rest of the Universe there will be no quantum of existence. That is, only this electron will actually exist. And the rest of the universe does not exist. In the next portion of time, certainty will appear in another elementary particle: an electron, a proton, a neutron, a photon. And it will only be there. During the quantum of time. In the next time quantum, certainty will be in a new particle. And only in it. And so **successively** certainty will appear **in all** elementary particles of the Universe. And then it will appear again in the first electron. And again it will go through all the particles. We can say that certainty will appear in each electron $1.25 \cdot 10^{20}$ times. Since we found out earlier that the frequency of an electron is exactly this number. The time interval between appearances of a quantum of being in an electron is equal to $8 \cdot 10^{-21}$ seconds. In a proton, certainty will appear $2.3 \cdot 10^{23}$ times. After $4.35\ 10^{-24}$ seconds. In the electromagnetic wave of red color certainty appears $4.2 \cdot 10^{14}$ times. Every time after $2.38 \cdot 10^{-15}$

seconds.

Here we see a very logical picture - the more essential the elementary particle, the more mass and energy in it, the more this existence supports the quantum of being. The more often it appears in this particle. The proton is larger than the electron, the electron is larger than the red electromagnetic wave. And the greater the frequency of appearance of certainty in the corresponding particles.

So, in one second certainty appears in each electron $1.25 \cdot 10^{20}$ times. And in the entire Universe there are 10 of these electrons in a huge degree. And the same is the case with protons, neutrons, photons and all elementary particles. The only logical solution, how the quantum of being can have time to visit all these elementary particles, is that the value of this portion of time is extremely small. That is, certainty appears in the electron for a very, very short time. If we compare the value of the time quantum t (when certainty exists in the electron) and the period T between the appearance of certainty in the electron (empty gap). That T/t ratio will be 10 huge. We know the value of the period T of an electron, it is equal to $8 \cdot 10^{-21}$ seconds. The value of the time quantum will be discussed below. But we can immediately say that this is a number from 10 to a minus of a very, very large degree.

The transition of successive events into a parallel process on the example of a cathode-ray tube.

How does the intermittent successive appearance of certainty, the quantum of being, lead to a three-dimensional world? Which we perceive as continuous and parallel. This transition is convenient to show on the example of a TV. Rather, a cathode ray tube. Here the process of transition from serial to parallel is very clearly visible.

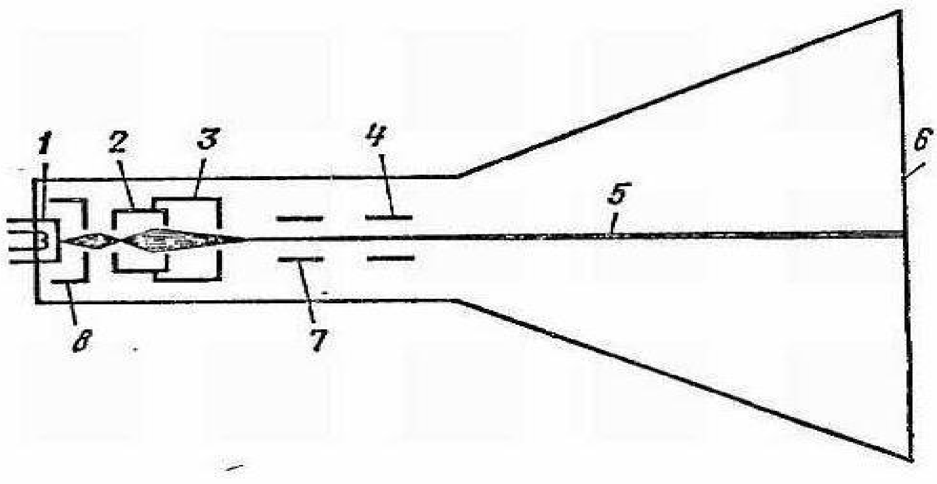

Figure 13. Cathode ray tube.

Briefly on the cathode ray tube. Its device is shown in Figure 13. A stream of electrons 5 flies out of the electron gun 1. This flow hits the screen 6, covered with a phosphor. This is a substance that glows when hit by a stream of electrons. The phosphor is on the screen in points, in pixels. Pixels are arranged horizontally. And the horizontal rows of pixels are under each other, vertically. Similar to how lines are arranged in text. And just as we read the text, the flow-beam of electrons passes through the pixels in the line of the screen, goes one line down, and so runs through all the lines from top to bottom. For an accurate hit of the electron beam on the target, on the desired pixel, two adjustment controls are used. 7 vertically and 4 horizontally. The stronger the flow of electrons falls into some point of the screen, the brighter this point glows.

For us, it is important that for a short time interval the electron beam hits only one point. That is, there is an intermittent, discrete action. And the passage of a stream of electrons along the line of the screen is a discrete phenomenon that occurs one after another. That is a clearly **sequential** process. Then we should see separate flashes on the screen when electrons hit. And these flashes should run through the lines of the screen from top to bottom. In reality, we see a solid image of the screen. It is important that it is constant, that is, each pixel of the screen glows constantly, regardless of whether the flow of electrons falls on it at the moment or not. And from the fact that all the pixels are constantly lit, a general, parallel picture of the screen is created. There is a transition from a sequential process to a parallel one.

Here, this effect creates a phosphor. When an electron beam hits a screen pixel, the phosphor placed there begins to glow. And while the electron beam goes further along the line of the screen, the phosphor continues to glow. Having run through the entire screen, the electron beam again approaches this point. And she still continues to shine. Moreover, with the force that was obtained from hitting this point with an electron beam. Maintains the value that it received at the time of activation. The glow depends on the magnitude of the electron flow - it was more or less at that moment.

Now, having run through the entire screen, the electron beam again hits this point. Already with a different strength. And the phosphor at this point again begins to glow. But with a different strength. Depending on the strength of the electron beam. That is, the electron beam activates the pixel, gives it some luminosity value. And the phosphor in the pixel maintains this value, gives stability, continuity. So that between two hits of the beam into the pixel, between cycles, it was activated - it glowed. And maintained the set value. That is, there are two additional processes. 1) The electron beam gives action, change. The specific meaning of this action. And the characteristic of the beam will be discreteness. And **a consistent** chain of these discrete actions. 2) The phosphor in the pixel gives stability and continuity. And it maintains the set value - the strength of the luminosity between cycles, beam hits. And this continuous luminosity of all points of the screen gives a whole, parallel picture of the screen. And we perceive what is happening on the screen as a simultaneous process. All images of objects on the screen - people, houses, trees, and so on - exist for us at the same time.

Let's draw an analogy with our picture of the world. A beam of electrons will be a certainty - a quantum of time. And the phosphor is the sphere of probability. The whole Universe, all its constituent elementary particles, let them be like one big screen.

Like a beam of electrons in a tube, certainty at each moment of time is located only in one pixel of the screen - in one of the elementary particles of the Universe. And only in this one point. No other pixel on the screen has this beam of electrons. So in no other place in the universe there is certainty. In each elementary particle, there is certainty for a strictly defined time - a quantum of time t. The electron beam in the tube at the next moment of time goes to the next pixel. And certainty in the next quantum of time appears in another elementary particle. The electron beam thus bypasses the entire screen. And certainty appears in every elementary particle of the Universe.

In each pixel, the phosphor maintains the glow between hits of the electron beam on that pixel. The sphere of probability performs the same function of continuity and stability. After certainty has been in the elementary particle, the sphere of probability expands from this place. Depending on what kind of particle it is - an electron, a proton, a neutron, after an appropriate period of time T, certainty will again appear in this particle. We calculated the T values for all particles earlier. And it is the presence of this sphere of probability that guarantees that certainty will again appear in this elementary particle. Every time a certainty appears in a particle, the sphere of probability expands from this point, and this ensures a new appearance of certainty in the particle. Thus, the sphere of probability ensures the very existence of each elementary particle. the continuity of its existence. Her stability. Thus, each elementary particle begins to exist permanently. And all constantly existing elementary particles exist in parallel. That is, there is a transition from the sequential process of the appearance of certainty in each particle, to the parallel existence of all these particles.

It is important to note one difference. In the tube, the electron beam moves through the pixels in turn, depending on the proximity of the location. In a row, pixels are located next to each other. Pixel 1, pixel 2, pixel 3. This is how the electron beam will move along them.

Certainty in elementary particles also appears in turn. But that, in which elementary particle certainty will appear at a given moment of time, depends on another factor. Now we will look into this.

Laws of Probability. Calculation of the probability of occurrence of certainty on the sphere of probability. The ratio of the probability value of different elementary particles.

Here it is worth saying a few words about probability. Let's experiment on the example of billiard balls. Put 2 balls in a box and mix there. What is the probability of drawing a certain ball from the box? Obviously, the probability will depend on the number of possible options n. We have 2 balls, that is, 2 options, $n = 2$. The probability of drawing one of the balls is $P = 1/n = ½$. Or 50%. If we put 10 balls in a box. Then the probability is $P = 1/n = 1/10 = 10\%$. If we put 1000 balls, then $P = 1/n = 1/1000 = 0.001 = 0.1\%$. That is, the probability of an event is calculated by dividing one by the number of possible events. $P = 1/n$.

Let's return to our picture of the world. 1) Certainty appeared in the electron. 2) Then, from this point, the sphere of probability began to expand. 3) After the time T, which for an electron is equal to $8 \cdot 10^{-21}$ seconds, certainty appears again on the surface of the probability sphere. What is the probability of certainty appearing at some of the points of the probability sphere?

Certainty can appear at **any** point on the surface of the probability sphere. Hence, all points of the sphere of probability are equally probable. The probability depends on the number of possible options. In our case, it is obvious that n will depend on how many balls with the size of certainty can fit on the surface of the probability sphere.

Certainty has few properties. 1) certainty exists in some place always at the same time t - time quantum. 2) certainty is an indivisible ball. The ball's diameter is d. Only these two parameters have certainty. There is nothing else: no color, no mass, no electric charge. And these two properties are necessary and sufficient for building the whole world.

Let's get back to billiard balls. Let's lay out, for example, 4 balls in a square. Let's see how much space they cover. Let's say the diameter of the ball is D. The sides of a square of 4 balls will be 2D. Although there will be gaps between the balls, you won't be able to move them more tightly due to their spherical shape. So, 4 billiard balls will occupy an area equal to 2D squared - $4D^2$. And, if it is one billiard ball, then the area it occupies is equal to D^2.

If you look at how it occupies the area, then certainty is the same ball, and behaves the same way. a certainty occupies an area equal to the square of its diameter. $s_o = d^2$, where s_o is the area occupied by the certainty, d is the diameter of the certainty. In order to calculate how many balls fit on the surface of a sphere, obviously, you need to divide the area of the sphere by the area occupied by the ball. The formula for calculating the area of a sphere is $S = 4\pi R^2$, where R is the radius of the sphere. Our sphere of probability is expanding at a rate of c. Therefore, the formula for the area of a sphere can be written as $S = 4\pi c^2T^2$, where T is the period of appearance of certainty in a particle, c is the speed of light.

Hence the number of balls that can fit on the probability sphere is $n = S/s_o = 4\pi R^2/s_o = 4\pi c^2T^2/s_o$.

The probability is equal to the ratio of one to n:

$P = 1/n = s_o / S = s_o / 4\pi c^2T^2$.

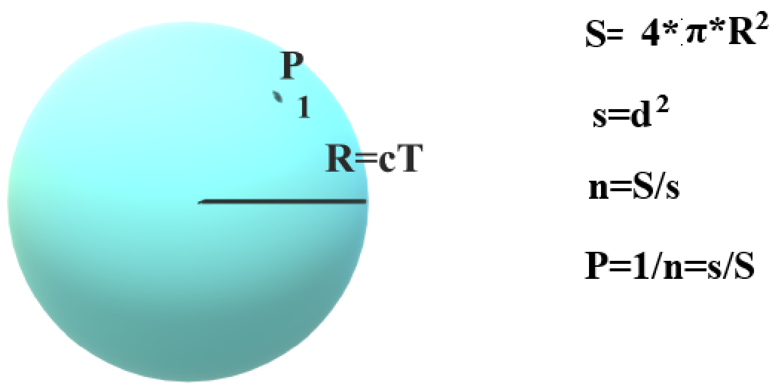

Figure 14. Probability of occurrence of certainty on the sphere of probability.

In this formula, only T changes - the time between occurrences of certainty in the particle. The rest is constant. And, apart from s_o, their meanings are known. We will return to the dimensions of the sphere of certainty. The main thing is that these are all constant values. And we can combine them into one constant. Let's call it the probability coefficient K. $K = s_o / 4\pi c^2$.

Then the probability formula will take the form $P = K/T^2$, where K is the probability coefficient.

Let's analyze the formula. It can be seen that the longer the time between occurrences of certainty in a particle, the larger the size of the probability sphere becomes. And so, accordingly, the value of the probability of the appearance of certainty in the sphere of probability is less.

Let's look at this on the example of elementary particles. Let us compare the probabilities of an electron and a proton. The electron period T_e is equal to $8 \cdot 10^{-21}$ seconds. The proton period T is equal to 4.35 10^{-24} seconds. Let's make the ratio of proton P and electron P_e.

$P / P_e = (K/T^2) / (K/T_e^2) = T_e^2 / T^2$.

The electron time period is 1836 times longer than the proton time period. Therefore, the ratio of proton and electron probabilities is equal to 1836 squared. And equal to 3370896 times. That is, the probability value when certainty appears on the surface of the probability sphere in the proton is more than three million times higher than the probability value when certainty appears in the electron probability sphere. This is because the probability sphere of an electron is 1836 times larger than the probability sphere of a proton. Now it is possible to accurately describe the process of appearance of certainty in elementary particles. A very important point. Each point of the probability sphere has its own probability value. Now we are considering a variant where the probability values at all points of the probability sphere are the same. Then, in real conditions, we will make small corrections.

1) For example, certainty appeared in the electron, in the sphere of probability. And this probability value at this point is fixed - it is transferred to the forward cycle. Let the probability value be P_1. 2) As we know, from this point the sphere of probability begins to expand. The radius of the sphere $R = cT$ increases with time. The area of the sphere increases $S = 4\pi R^2 = 4\pi c^2 T^2$. And rapidly, inversely proportional to the square of time, the probability of points in the sphere of probability decreases. $P( ) = K/T^2$. 3) When certainty appears in the sphere of probability, then the probability of the appearance of certainty is equal to one, P=1. Then a sphere of probability appears at this place, and at first the probability value is tenths, then hundredths, thousandths, and so on. That is, the probability from one is rapidly decreasing. Inversely proportional to the square of time. Decreasing, the probability will inevitably become equal to the probability that was recorded in the previous cycle. Probability, which was at that point of the past sphere of probability, when certainty

appeared. $P_{(\quad)} = P_1$. The main thing is that when the probability value in the new probability sphere becomes equal to the previous probability value, it is at this moment that certainty will necessarily appear on the surface of the current probability sphere. 4) certainty appears at some specific point in the sphere of probability. At this point on the probability sphere, there was a probability value P_2. Now this value P_2 is fixed, and it is transferred to the cycle ahead. 5) And already in the new sphere of probability, the probability value will decrease from one. And when it is equal to the value of P_2, $P_{(\quad)} = P_2$, again certainty will appear on the new probability sphere.

That is, it is the probability that is the connecting link between the next appearances of certainty in an elementary particle. It is on the value of probability that the main thing depends - when, after how much time certainty will appear in an elementary particle.

Now another example from the life of billiard balls. Let's say we have a warehouse system. Warehouses are located all over the world. And there are a thousand billiard balls in the warehouses. Several hundred balls in America, some in Europe, some in Japan. Warehouses are controlled by a computer program. And, let's say, you need to choose any 10 balls for shipment to the buyer. Suppose a program with random number generation is running. And randomly selects balls from the entire system of warehouses. Then, for example, the first ball will be selected in America, the second in Japan, the third again in America, the fourth in Europe. That is, between two events - the choice of the first and second ball, moments can pass (computer programs now work very quickly). And in space it will be thousands of kilometers. And if this situation would occur 100 years later (when Elon Musk opens a billiard room on Mars), then the distance between the balls could be millions of kilometers. And in time it will be successive events. That is, in the processes of probability, distance does not play any role. What is important is **the sequence** of actions, and time. Based on this example, certainty has the same properties. Because the emergence of certainty is a purely, 100% probabilistic event.

Certainty appeared in some elementary particle. And in the next time quantum, certainty will appear in a particle that is located in absolutely any place in the Universe. That is, the distance here does not matter at all. And now we know by what signal certainty appears in the particle. When the following situation occurs in some sphere of probability. As the probability sphere expands, the probability value of that sphere will decrease so much. That at this very moment the probability of this sphere is equal to the value of the probability from the previous cycle. And then immediately certainty will appear in this sphere of probability.

Definition of what is the sphere of probability and certainty.

Now let's give clearer definitions of what certainty and the sphere of probability are, and why they are called that. The main property of certainty is that at the moment of a portion of time t, certainty is **in only one place**. And nowhere else. Moreover, this place, the point is precisely **defined**. There are no quantum things from quantum mechanics. Moreover, in this place certainty is strictly at **a certain** point in time - in a quantum of time. It is from this property that certainty gets its name.

At any particular moment in time, certainty is strictly in a certain place. Isn't there too much definition in one sentence? - you ask. For science just right. The meaning of science lies in the unambiguous definition of the studied phenomena.

The fact that everything works sequentially causes certainty to appear in only one place. And appear in turn, consistently in all elementary particles. Let's say certainty has appeared in some particular electron. After a period of time T, after a cycle, certainty will again appear in this electron. If you do not make additional conditions, then certainty may appear in the same place as the previous time. That is, it will just be marking time. There will be no movement, no development. Therefore, it is necessary that the next time the certainty in the electron appears at a distance from the previous appearance. Moreover, the more time passes from the moment of the previous appearance of certainty, the greater the distance should be. From this comes the rate of expansion of the sphere of probability, equal to the speed of light. Assume that after a time T the certainty should appear at a distance R = cT from the previous occurrence. All directions of appearance of certainty are equally probable and equal. Then the radius R outlines the sphere around the point of the previous appearance of certainty. That is, the totality of all points where certainty can appear, and constitutes the sphere of probability. Thus, the very logic of events requires the necessity of the sphere of probability and determines its properties. Now let's deal with the rate of expansion of the sphere of probability. If it is small, comparable to the usual speeds we observe, what will happen? Periods T between occurrences of certainty in elementary particles are small. And if the rate of expansion of the sphere of probability is small, then all occurrences of certainty in the particle will be close to each other. The particle will stick together, tend to itself. And there will be no interaction between particles. It is precisely in order that there be a large distance between neighboring occurrences of certainty in a particle, that the rate of expansion of the sphere of probability is so large. That is such a high speed of light. Precisely because of this. And not because of anything else. In fact, everything in the world consists of one element - certainty. And in order for there to be diversity, not everything stick together at one point, an expanding force is needed that prevents the return to the previous point. This force is the sphere of probability, which expands at the speed of light.

Real existence of the Universe in the smallest intervals of time. Snapshots of the universe frame by frame.

Let's mentally slow down the passage of time to the limit - to the smallest value, to the quantum of time. And let's see how the universe looks at this moment. Then we move on to the next time quantum - and see the picture of the Universe there. It will be like slowing down a film. And view each frame separately. Frame by frame.

So, in this snapshot of the universe, what will we see? The most important thing is that certainty is in some one elementary particle. In one place. There is no other certainty anywhere. This time. And before that moment, certainty was somewhere else, in another particle. Therefore, at this place, a sphere of probability has just arisen - a sphere of minimum radius. This is two. This sphere can be at any end of the universe. Since the laws of probability work, the distance does not matter. Somewhere, in some particle, a period of time equal to two time quanta has passed since the appearance of certainty. T = 2t. And the sphere of probability in this place slightly expanded. The radius of this sphere of probability has slightly expanded R = cT = 2ct. It's three. And this sphere of probability can be absolutely anywhere in the Universe.

And so it is throughout the universe. Everywhere, in the place of each elementary particle, there is a sphere of probability, which has expanded to a certain radius. Depending on how much time has passed since the previous appearance of certainty. More precisely, how many quantums of time have passed since that moment. T = nt, where T is the time interval, t is the time quantum value, n is the number of time quantums. A natural number is always a positive integer.

And the radius of this sphere of probability can be represented as follows:

R = cT = nct.

The important thing is that in all probability spheres the radii will be at least slightly, but different. There will be no pair of probability spheres with exactly the same radius. Because certainty appears everywhere in turn. Then the spheres of probability appear in turn. And the time since the last appearance of certainty in all spheres of probability is different. From the formula T = nt, the number n in all spheres of probability will be unique. And the radius of the sphere of probability will be different for everyone. Not repetitive.

According to the formula R = cT = nct. And somewhere there will be such a sphere of probability, the probability value of which will be very close to the probability of the previous cycle P. In one step. Let this be element number 4 in our snapshot of the universe.

Now let's move our film strip forward one frame. Let's see what will happen to the Universe in the next moment - a quantum of time.

We look at element number 1. Where there was certainty, now there is a sphere of probability with a minimum radius. Element 2 - the time of this sphere of probability has increased by one portion - a quantum of time. T = (1+1)t = 2t. And, accordingly, the radius of the sphere of probability has increased. R=cT=2ct.

And so in all the sphere of probability. Their period has increased by a portion of time t. By the formula T = (n+1)t. Their probability spheres will increase. And the probability values in the probability spheres will decrease. So, in the sphere of probability number 3, the radius will be equal to: R = cT = 3ct. Etc.

Where is our certainty? Let's look at the sphere of probability number 4. At this point in time, its sphere expands a little more. The radius of the sphere is increased by ct. And the probability in the sphere has decreased. And it became equal to the probability in the previous cycle. Therefore, certainty appeared on the surface of this sphere of probability, at one of the points. And it exists only in this place. And nowhere else.

Let's move the frame again. For the next portion of time. Time in all spheres of probability has increased by a portion t. The radii of the probability spheres have expanded by ct. In element number 4, instead of certainty, a sphere of probability appeared. And the certainty itself appeared on the surface of some of the spheres of probability. Where the probability of the sphere has decreased to the value of the probability of the previous cycle.

And with each subsequent moment of time, a quantum of time, similar changes occur.

The important thing is that different particles have different frequencies of occurrence of certainty in the particle. And a different radius of the sphere of probability. So the time T of an electron is 1836 times longer than that of a proton. Let's take a hydrogen atom. In one cycle, certainty will appear in the electron 1 time. The proton is inside the electron. The same certainty will appear in the proton 1836 times during this time. And during the time that the proton will emit one sphere of probability, the proton will emit 1836 spheres of probability.

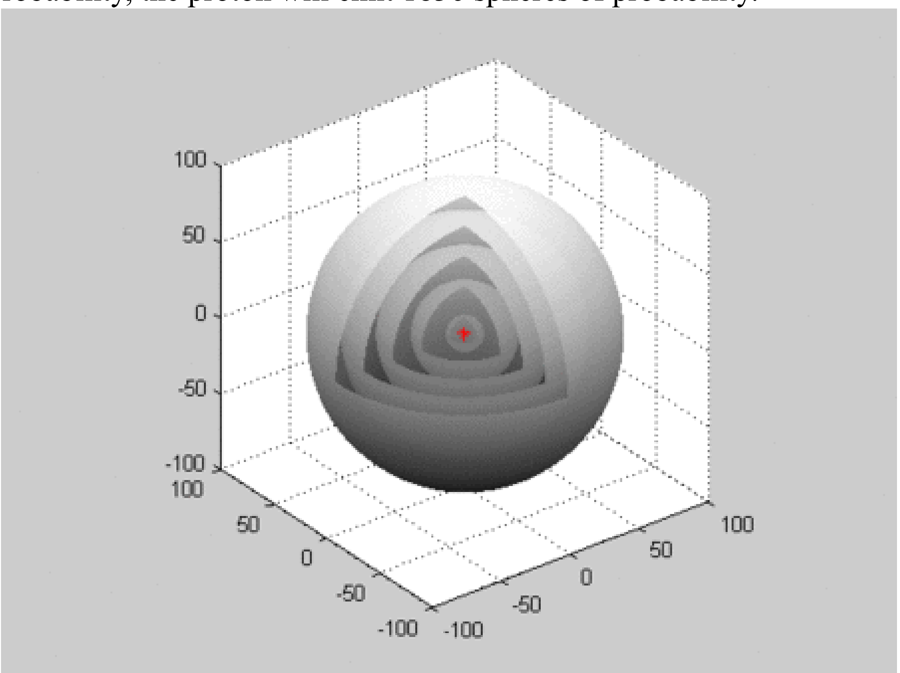

Figure 15. Model of the emission of probability spheres by an elementary particle.

Intersection of spheres of probability. Changing the probability value at the intersection points of the probability spheres.

Now let's take a closer look at these spheres of probability. While we were following the sphere of probability until the moment when the cycle ended, and certainty appeared on the surface of the sphere. But what happens to this area next? And the same thing happens. After certainty has appeared on it, the sphere of probability continues to expand at the speed of light. But certainty appears on it only once. At the end of the cycle, when the probability of the sphere is equal to the probability of the previous cycle. After that, the sphere of probability simply expands. And certainty does not appear on it.

As we have already said, all points of the sphere of probability are equally probable. And the probability of any point in the sphere will depend on the time T, how much this sphere of probability expands. $P_{(\quad)} = K/T^2$. If the probabilities of all points of the sphere are the same, then we call this probability **the standard** probability. But in nature, the probability values at different points of the probability sphere will be different. And that's why, the spheres of possibility expand further. Probability spheres emit all particles. That is, the sources of probability spheres are located at different points. And when expanding, the probability spheres from neighboring particles will **intersect**. The intersection of the two probability spheres will be a circle. And an important point - points on this circle will have a probability of both probability spheres 1 and probability spheres 2. That is, at these points the probabilities of both probability spheres will be **summed up**.

The probability of the circle point, the intersection of the probability sphere 1 and the probability sphere 2 is equal to the sum of the standard probability P_1 of the first sphere and the standard probability P_2 of the second sphere.

$P = P_1 + P_2$.

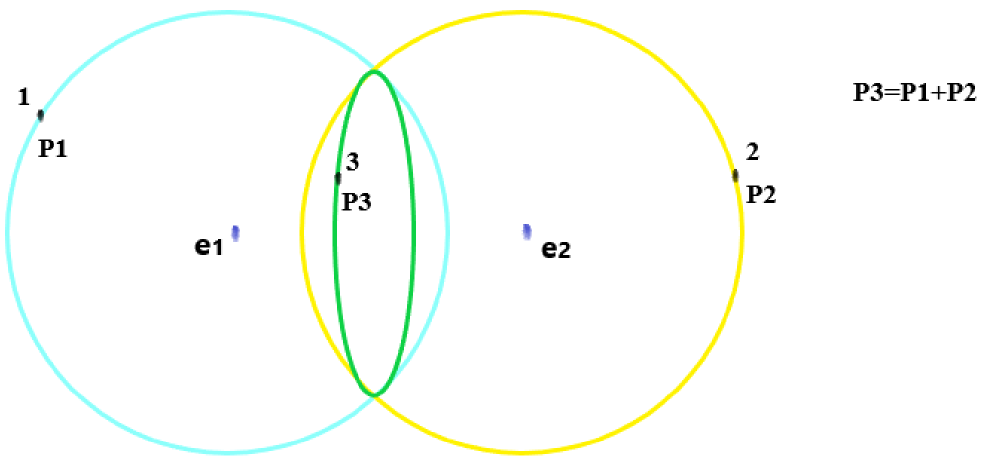

Figure 16. Intersection of probability spheres coming from electron e1 and electron e2. The probability at the points of the circle - the area of intersection of the spheres of probability will be equal to the sum of the probabilities of each sphere.

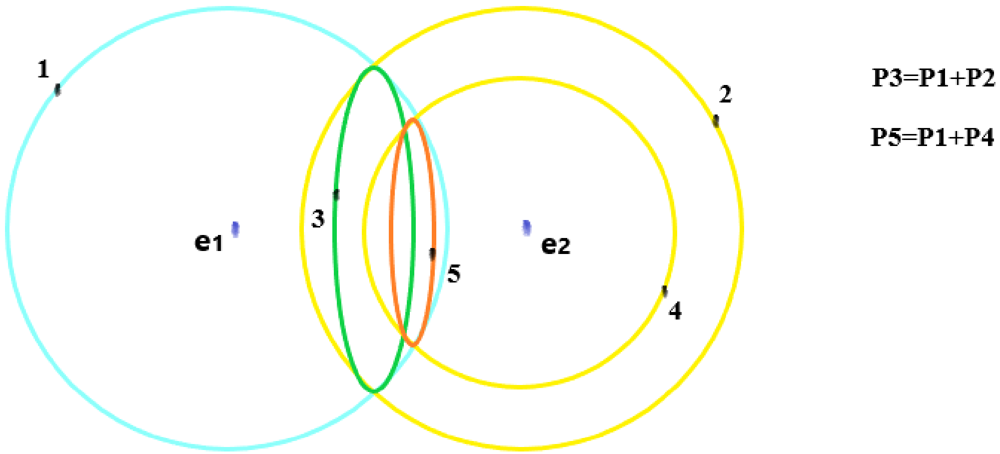

Figure 17. Intersection of a probability sphere coming from electron e1 and two probability spheres coming from electron e2.

And all this happens in dynamics. That is, both probability sphere 1 and probability sphere 2 expand at the speed of light. And the area of their intersection, the circle, is also expanding. But at a speed less than s.

Let's take 2 elementary particles, for example, 2 electrons. which are relatively close to each other. Each of the electrons is the source of a huge number of spheres of probability. In one second, each electron emits 1.25 x 10^{20} probability spheres. Expanding at the speed of light, these spheres of probability will repeatedly intersect with each other. Thus, each sphere emitted by the first electron will have millions of intersections with millions of probability spheres emitted by the second electron. Each intersection of the two spheres will be a circle. But there will be a great many of these intersections of the spheres of probability in the form of a circle. And these circles themselves will intersect each other at some points. As we found out, at the point of intersection of the spheres of probabilities, their probabilities add up.

For example, 1) Take some specific sphere of probability 1 emitted by the first electron. 2) It will intersect with millions of probability spheres of the second electron. And at the intersection points, the **standard** probabilities of these spheres will add up. 3) At some points of our probability sphere 1 there will be an intersection not with one, but with two or three probability spheres emitted by the second electron. For example, at point A, our probability sphere 1 intersects with the two probability spheres of the second electron. Then the probability at this point A will be equal to $P_{(a)} = P_1 + P_2 + P_3$. Where P_1 is the standard probability of the probability sphere of the first electron. And P_2 and P_3 are the standard probabilities of the probability spheres emitted by the second electron. 4) Since millions of probability spheres of the second electron intersect with our sphere of probability 1 of the first electron. And at the points of intersection of the spheres, their standard probabilities are summed up. Then, as a result, points will form on the surface of our probability sphere 1, and even sets of points, the probabilities of which will differ much from the standard probability sphere of probability 1. For neighboring points, the probability may differ even several times. That is, in terms of probability values, our probability sphere 1 will be very heterogeneous.

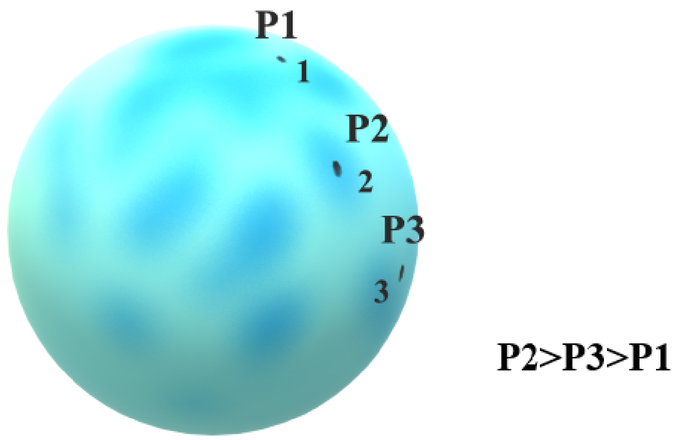

Figure 18. Distribution of points with different probabilities over the surface of the probability sphere.

This is shown in Figure 18. Areas with a higher probability will have a darker color.

$P_{(2)} > P_{(3)} > P_{(1)}$. The probability at point 2 is higher than the probability at point 3, and even higher than at point 1.

And this our sphere of probability 1 is no different from other spheres of probability of the first electron, and from the sphere of probability of the second electron. All these spheres of probability intersect with each other. And as a result of the intersections, each probability sphere will have a surface with various probability values.

We have considered the interaction of the sphere of probability of two electrons. In reality, all elementary particles emit probability spheres. And, expanding, they constantly intersect with each other. And at the intersection points, the standard probabilities of these spheres add up. And as a result, the surface of each probability sphere will have different probability values.

One point is important here. As we know, the total probability of all points of the probability sphere is equal to one. At any point in time. As a result of intersections of probability spheres at some points of the sphere, the probability values will be greater than the value of the standard probability averaged over the entire sphere. There will be an increase in probability. But the probability of the whole sphere of probability is always equal to one. For balance, at other points in the sphere, the probability values will be less than the average for the sphere - the standard probability.

The most important thing in the existence of the sphere of probability is the moment when certainty appears in it. Let's look at this point again.

1) the sphere of probability expands. Its standard probability decreases. 2) The standard probability has become equal to the value from the previous cycle. 3) certainty must appear on the surface of the sphere of probability. In a simplified version, the probabilities of all points in the sphere of probability were equal, everywhere there was a standard probability. And certainty could equally well appear at any point in the sphere of probability. But the meaning of probability is that the greater the probability at some point, the more likely certainty will appear at that point. In reality, we have probability spheres with different probability values at each point of the sphere. And, of course, certainty is more likely to appear at the point where the probability value is greater.

4) Let's say certainty appeared at point 1 of the sphere of probability number 1. With probability P_1. This probability value is fixed. And will be compared with the standard probability in the next cycle. 5) In place of point 1, a new sphere of probability appears, let's denote it by number 2. It expands. The standard probability of this probability sphere 2 decreases. And when the standard probability is equal to the probability at point 1, $P = P_1$, then certainty will appear on this

sphere of probability 2. 6) In the real world, by this point this probability sphere 2 has intersected with millions of other probability spheres. And on its surface there will be points with different probabilities. And, most likely, certainty will appear at the point where the probability value is large. Let's say at point 2, where the probability is P_2. 7) The value of P_2 is fixed and will be compared with the standard probability in the next cycle. Etc.

It is important here that the values of P_1, P_2, at all points of appearance, the certainty in the particle will be **different**. And this makes it possible to change the parameters of the particle.

In fact, here's what's happening. 1) Intersections with other probability spheres that other particles emit give a variety of probability values on the particle's probability sphere. That is, other particles emit probability spheres, which then intersect with this sphere. And form a probability distribution on the surface of the sphere. And it depends on where certainty will appear, at what point in the sphere of probability.depends on the place where the certainty appears **trajectory** of movement of the definiteness in the particleThat is, the connection of successive appearances of certainty in a particle. And since the definiteness of the trajectory of motion closed into a ball is the particle itself, the **direction** of motion of the particle depends on the distribution of probabilities into the sphere. It will go forward, or backward, or somewhere sideways.also depends on **speed of a** given particleThat is, both the direction and the speed of the particle, the whole mechanics of this particle depends on the probability distribution in the sphere of probability.

3) When certainty appears in the sphere of probability and the value of the probability is fixed at this point, then you can immediately determine how long it will take for certainty to appear next time. And what will be the radius of the sphere of probability. From the formula $P = K/T^2$, the time is $T = \sqrt{(K/P)}$.

It can be seen from the formula that the higher the probability value at the place where certainty appears. The less time will be, the faster certainty will appear next time. And the radius of the probability sphere will be smaller:

$R = cT = c\sqrt{(K/P)}$.

We also consider the energy formula $E = h\nu$. As we know, the frequency is inversely proportional to the period: $\nu = 1/T$; $E = h/T = h\sqrt{(P/K)}$.

That is, an increase in probability gives an increase in energy. And this increase in probability is caused by the probability spheres of other particles that intersect with the probability sphere of this particle and this makes an addition to the probability. It turns out that other particles through their spheres of probability transferred additional energy to this particle. That is, through the intersection of the spheres of probability, the main interaction occurs - the transfer of energy from one particle to another. And from this follows the transfer of energy, the interaction between enlarged objects - atoms, molecules, physical bodies.

Change in the probability distribution in the probability sphere of a particle when it moves at a speed close to the speed of light. The new main formula of physics.

Consider the question of how an elementary particle changes the direction and speed of its movement due to a change in the probability value at the points of its probability sphere. And these changes arose due to the intersection with the probability spheres emitted by other particles.

Suppose a particle is moving in some direction with a speed v. What does it mean if we use our picture of the world with certainty and spheres of probability. As we have already found out, each particle is a trajectory for the emergence of certainty. This trajectory is closed in a circle. A circle rotates around its axis. In general, the trajectory describes a ball, and this ball is an elementary particle. Spheres of probability emerge and expand along the entire trajectory. And certainty appears at the appropriate time in the realm of probability. When the radius of the probability sphere is equal to R. At the moment of the appearance of certainty, the radius of all probability spheres is approximately the same. Therefore, it is possible to compose the appearance of certainty in the spheres of probability - take one sphere of probability with radius R and transfer all occurrences of certainty over a certain period of time to this sphere of probability. For example, in a second. Let's take an electron as an example of an elementary particle.

Assume that the electron is not affected by other particles. That is, there are no intersections with the probability spheres of these particles. Then all points of the probability sphere of our electron will have the same probability. And certainty will appear at any point in the sphere of probability, in any direction. That is, the points of occurrence of certainty in our generalized sphere of probability will be evenly distributed over the entire surface of this sphere of probability. This means that there is no preferred direction for the appearance of certainty on the probability sphere of an electron. This means that this electron will rest in place. Its speed will be zero.

Now consider the option when in some direction, in some area of the generalized sphere of probability, there will be more points of occurrence of certainty. That is, in this direction, certainty will appear more often than in others. This means that the trajectory of the emergence of certainty has shifted in this direction. That is, the ball - the electron has moved in this direction. So the electron will move in that direction. He will have a specific direction of movement. And there will be a specific speed.

This situation will be seen more clearly at high electron velocities. Close to the speed of light. It is clear that in order for an electron to move at a speed close to the speed of light in some direction, it is necessary that certainty appear as often as possible in that direction in the sphere of probability. And as close as possible to this direction - the direction of the velocity vector.

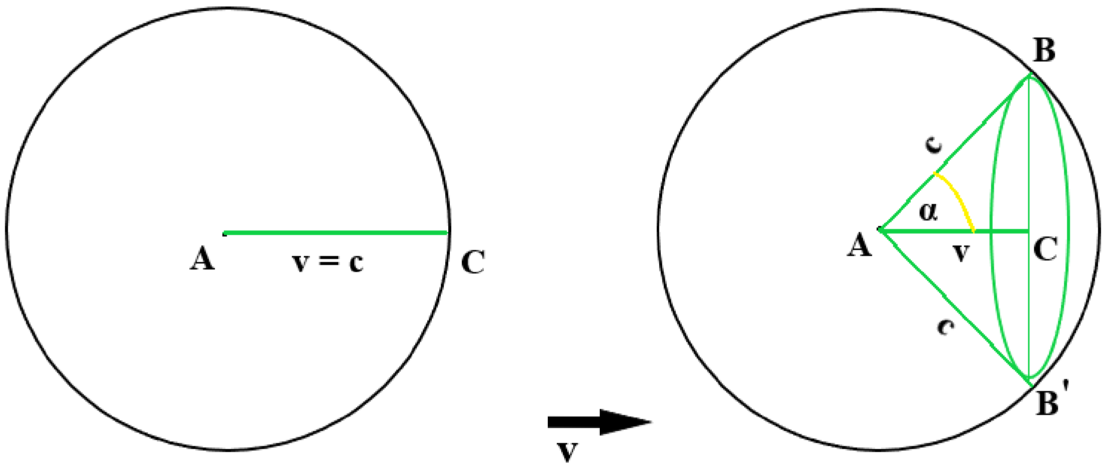

Figure 19. Generalized probability sphere of an electron at an electron speed equal to the speed of light (left). And comparable to the speed of light (right). The appearance of the locus of points of occurrence of certainty in the generalized sphere of electron probability. Angle α between the circle and the velocity vector v.

Let's look at Figure 19. Here is a generalized probability sphere centered at point A. AB and AB' are the radii of this probability sphere. This sphere of probability expands at the speed of light c. Let's equate the radius of our sphere of probability to the value of the speed of light. AB = AB' = s.

Our electron is moving at a speed v. And in the direction of the velocity vector v. Imagine that our electron is moving at the speed of light. Then how would certainty appear on the sphere of probability of an electron? Certainty would appear in the sphere of probability always strictly in the direction of the electron's motion. In the direction of the velocity vector v. From the center of the sphere of probability, point A, we plot the velocity vector v. This will be segment AC. Since the speed of the electron is equal to the speed of light, v = c, then the segment AC would become the radius of this generalized electron probability sphere. That is, in each new sphere of probability of an electron, certainty would appear at point C, a point on the line of the electron's direction of motion.

In other words, the trajectory of the appearance of certainty in the electron would become rectilinear. Just like an electromagnetic wave. The thread of the ball, the trajectory of the emergence of certainty would unravel and become straight. By the way, this is a description of a real physical process. When an electron and a positron combine. And as a result, they turn into two photons, electromagnetic waves.

But we know that the speed of a particle is always less than the speed of light. In the following example, the electron speed v is less than the speed of light. And for clarity, the speed of an electron will be comparable to the speed of light. Again, from the center of the generalized sphere of probability, point A, we plot the electron velocity vector v. This will be segment AC. Draw a plane perpendicular to AC. It will intersect with our sphere of probability in the form of a circle centered at point C. This circle will have a huge physical meaning. This circle will be the locus of points for all occurrences of certainty in our generalized electron probability sphere. Its location on the surface of the generalized probability sphere will depend on the electron's velocity v.

How do we get this locus of points?. Let us introduce a coordinate system into our generalized sphere of probability. The center of the probability sphere, point A will be the zero point, point 0, of the coordinate system. And the velocity vector v, segment AC, we will make the axis 0X of the coordinate system. In the opposite direction, set aside the 0-X axis. Let's make projections of all occurrences of certainty in our generalized sphere of probability onto the 0X axis - in the direction of electron motion. And on the 0-X axis - in the opposite direction. The projections will be positive numbers - on the 0X axis, to the right of point A. And negative - on the 0-X axis, to the left of point A. And just add the projections of all points of occurrence of certainty in the generalized sphere of probability. Most projections of identical positive and negative numbers will become zero when added. That is, the points of appearance of certainty to the right of the center of the probability sphere and to the left of the center mutually compensate each other. But some of the points will remain, there will be an advantage in the direction of the electron's movement. Indeed, if the electron moves in this direction, then certainty should **more often** appearThere should be an advantage in the direction of movement. And these points of additional appearance of certainty in the sphere of probability form a given circle on the surface of the sphere of probability, a circle centered at point C. And the location of this circle will depend only on the direction of the AC velocity vector. And from the magnitude of the speed - the length of the AC.

Indeed, at a speed equal to the speed of light, all points of appearance of certainty in the generalized sphere of probability will be at point C. The lower the speed, the smaller the segment AC. Point C is getting closer to the center of the generalized sphere of probability. And since C is the center of the circle, the circle itself will be closer to the center of the probability sphere. The physical meaning will be that the lower the speed, the smaller the preponderance in the direction of movement of the points of occurrence in the sphere of probability. The closer to the center of the sphere, the point of equilibrium, the point of rest will be this locus of points. The important thing is that there is a wonderful formula for these logical conclusions. And at first it was obtained experimentally. That is, when studying the real world. Let's explore the resulting circle. Let's draw through point C, the center of our circle diameter. The diameter will intersect with the circle at two opposite points - point B, and point B'. Connect point A, the center of our generalized sphere of probability, with points B and B'. We will have two identical right-angled triangles ABC = AB'C. Since the triangles are the same, we will consider one of them - ABC. This triangle has a right angle ACB. We have drawn through point C a plane perpendicular to the velocity vector v. Therefore, BC is perpendicular to AC. The hypotenuse of this triangle is the radius of the sphere of probability - the segment AB. It is equal to the speed of light. AB = s. One leg of the triangle is the velocity vector v. v = AC. The second leg is the radius of our circle centered at point C. Segment BC. The most important element in a triangle is the angle BAC. The angle between the velocity vector v (segment AC) and the radius of the sphere, segment AB (equal to the speed of light c). Let's denote this angle as angle α. If the radius AB is rotated around the velocity vector, segment AC, at an angle α, then we will get the desired circle centered at point C. Therefore, the triangle ABC with angle alpha completely defines this circle. And we will study this triangle.

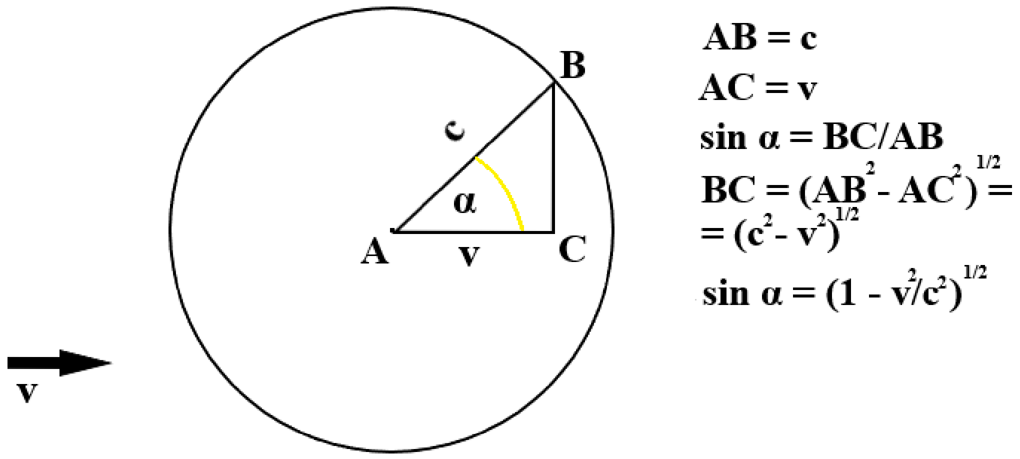

Figure 20. Study of the angle α between the circle and the electron velocity vector v, as the angle α in the triangle ABC. Where BC is the radius of this circle.

Let's step aside a little. If we are studying speeds close to the speed of light, we definitely need the formulas of the special theory of relativity. For example, those that indicate an increase in the energy of a particle with an increase in its speed: E \u003d E_0 / √ (1-v^2 / c^2), where E_0 is the energy of a particle at rest, E is the energy of a particle moving at speed v. And the Lorentz factor is $1/\sqrt{(1-v^2/c^2)}$. Denoted by the letter γ. It just shows how much energy changes depending on speed. With the Lorentz factor, the formula takes the form $E = \gamma E_0$.

There are also formulas for linear dimensions and time.

$L = L_o\sqrt{(1-v^2/c^2)} = L_o/\gamma$, where L_o is the length of the fixed rod, L is the length of the moving rod. This formula shows that, depending on the increase in speed, the size of the body decreases.

And the formula for decreasing, slowing down time depending on the speed of the body: T \u003d T_0√ (1-v^2 / c^2) \u003d T_0 / γ, where T_0 is time in a stationary system; T is the time of an object moving at a speed v. The closer the speed v to the speed of light, the shorter the time intervals in this system, in comparison with the stationary system.

Let's go back to our triangle. Figure 20. We have an electron that is moving at a speed v. In the triangle ABC, consider the angle α, on both sides of which lie: the leg AC is the velocity vector v, and the hypotenuse AB is the speed of light c.

The cosine of the angle α will be equal to $\cos\alpha = AC/AB = v/c$.

Substitute this value into the Lorentz factor formula: $\gamma = 1/\sqrt{(1-v^2/c^2)} = 1/\sqrt{(1-\cos^2\alpha)} = 1/\sin\alpha$.

The Lorentz formula has been simplified in an amazingly beautiful way. And found true meaning. She revealed the reasons why, when the speed of bodies approaches the speed of light, the properties of these bodies change so radically: their mass, energy, time and size.

What does the sine of the angle α mean. This is the ratio of the leg opposite the angle α and the hypotenuse: BC/AC. In fact, the sine of alpha shows the magnitude of the angle alpha. And the angle α shows the location of the circle on the sphere of probability. Circles as a geometric place of points of appearance of certainty in the sphere of probability. Shows how strongly the averaged place of occurrence of certainty in the sphere of probability shifts from the center of the sphere to its edge - to the radius of the sphere. In the direction of particle velocity.

Let's go through the logical chain from the very beginning. We have an electron. Let us accelerate an electron in an electromagnetic field to speeds comparable to the speed of light. As we have already said, all particles interact with each other through the intersection of the probability spheres emitted by these particles. And the increase of the probability value at some points of the probability sphere. What causes the particle to move in that direction. And increases its speed.

So it is in our electron. An electromagnetic field arises when the probability spheres emitted by the particles cross. And this intersection of the spheres of probability emanating from other particles has led to the fact that the circle, the average place for the appearance of certainty on the generalized sphere of probability of the electron, has shifted towards the velocity vector. Suppose we accelerated our electron to a speed equal to half the speed of light: v = 1/2c.

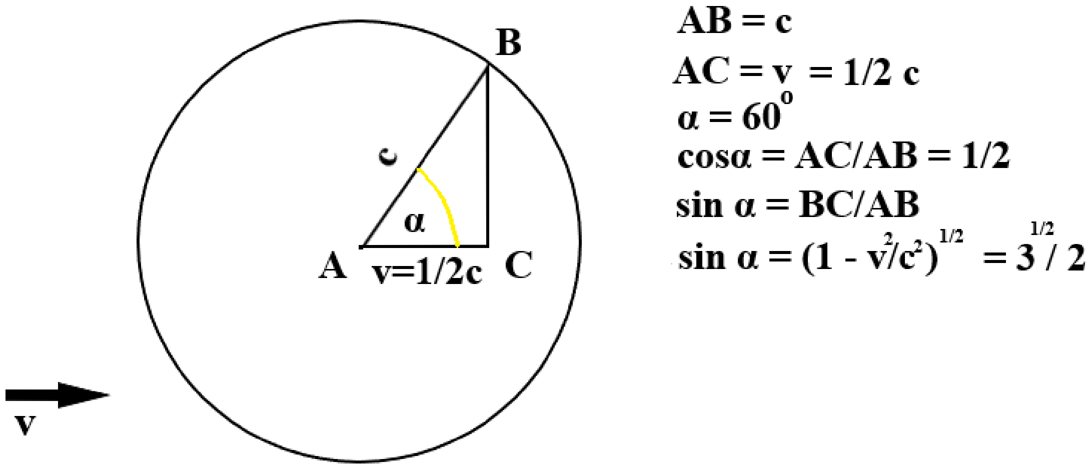

Figure 21. Triangle ABC with an electron speed of c/2.

See Figure 21. Then the angle α in the triangle ABC will be equal to 60 degrees. That is, a circle with a center at point C will be located on the surface of the probability sphere in such a way that if you connect any point of the circle with the center of the sphere, point A, then the resulting radius of the probability sphere will make an angle of 60 degrees with the velocity vector. Angle BAC is 60 degrees. It is obvious. After all, the radius is equal to the speed of light. Our speed v is equal to half the speed of light: v = 1/2c. The cosine of the BAC angle is: cosα = v/c = ½. With cosine α equal to ½, angle α = 60 degrees.

At rest, the speed of an electron is zero. The cosine of α is: cosα = v/c = 0. The cosine of zero is 90 degrees. That is, as we said, at rest the circle shifts to the center of the generalized sphere of probability. That is, at rest, all occurrences of certainty in the sphere of probability of an electron are equally probable. There is no probability bias in either direction.

Obviously, in order to move the circle from a 90 degree angle to a 60 degree angle, it is necessary to add probability values to the points of the probability sphere of an electron moving at half the speed of light. $P>P_o$, where P is the probability of a point in the sphere of probability of an electron moving at a speed v; P_o is the probability of points in the probability sphere of an electron at rest. Moreover, we can absolutely clean out the value of the new probability of the appearance of certainty in the sphere of probability of a moving electron.

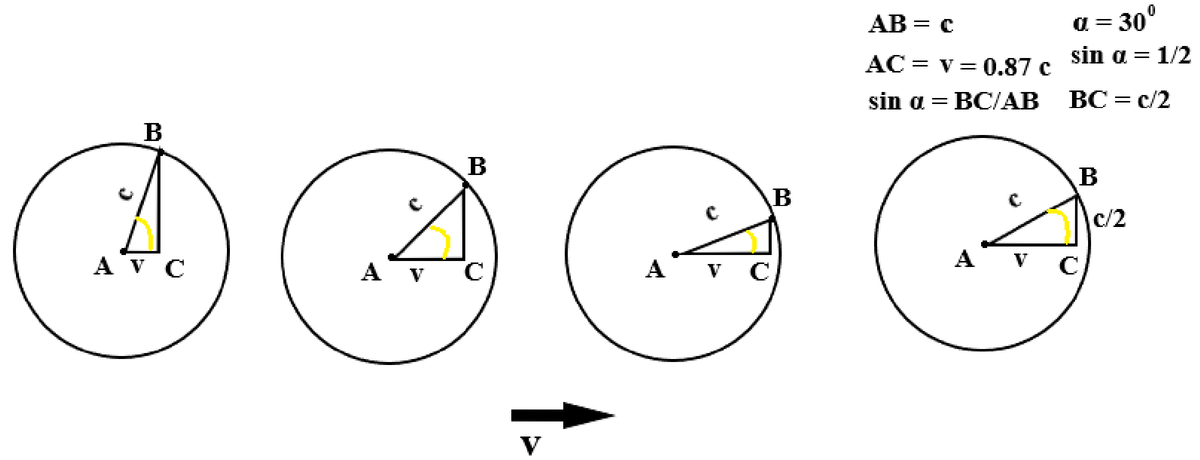

Figure 22. Changing the position of the circle of an electron with a change in its speed. Shown through a change in the triangle ABC. BC is the radius of the circle. In the figure on the right, the speed of an electron is √3/2 the speed of light. Angle α is 30 degrees.

As we have already said, the period of time T between occurrences of certainty is related to the probability of occurrence of certainty in the probability sphere by the formula: $T = \sqrt{(K/P)}$, where K is the probability coefficient, P is the standard probability of the probability sphere.

That is, the greater the probability of occurrence of certainty in the sphere of probability of an electron, the shorter the period of time between these occurrences. This is also indicated by the formula of the special theory of relativity: $T = T_0\sqrt{(1-v^2/c^2)} = T_0/\gamma$, where T_0 is time in a fixed system; T is the time of an object moving at a speed v. If the speed of an electron is 1/2c, then the time in this electron is: $T = T_0\sqrt{(1 - (0.5c/c)^2)} = T_0\sqrt{(1 - ¼)} = \sqrt{3}/2t_0$. That is, the period of time between appearances of certainty in a moving electron will decrease, and will be equal to √3/2 of the time of this electron when it is at rest.

This can be calculated in a slightly different way. As the electron speed increases to 1/2c, the circle shifts into the sphere of probability. And the angle α is formed. Angle α is 60 degrees. Time can be calculated using the formula: $T = T_0\sin\alpha = T_0\sin 60° = \sqrt{3}/2T_0$. And you get the same result. Only this formula shows the physical meaning, which is why time slows down in moving bodies. Due to the fact that the probability of occurrence of certainty in the sphere of probability increases.

And the circle, the locus of certainty occurrence points in the sphere of probability, shifts in the direction of the velocity vector. And the degree of time dilation in the particle depends on the angle α between the points of the circle and the direction of motion of the particle. The smaller the angle, the closer the circle is to the velocity vector, the greater the speed (the closer its value is to the speed of light), the more the time in the particle slows down.

What happens to particle size? The radius of the probability sphere at the time of occurrence of certainty is calculated by the formula R = cT, where T is the time between occurrences of certainty in the probability sphere. If the electron moves at a speed c/2, then the radius will be equal to: $R = cT = cT_0\sqrt{(1-v^2/c^2)} = \sqrt{3}/2cT_0 = \sqrt{3}/2R_o$, where c is the velocity of the particle, R_o is the radius of the probability sphere resting particle. That is, the radius of the probability sphere of a moving electron will be equal to √3/2 of the radius of an electron at rest. An electron represents a ball for us - a trajectory of the emergence of certainty, closed in a circle, and the rotation of a circle around its axis. And if the distance between the occurrences of certainty in an electron decreases, then the ball itself, the electron itself, will decrease. That is, the size of an electron moving at a speed of c/2 will be equal to √3/2 of the size of an electron at rest.

This is also evidenced by the formula of the theory of relativity for linear dimensions. With a body speed of c/2, the size of the body will be: $L = L_o\sqrt{(1-v^2/c^2)} = L_o\sqrt{(1 - ¼)} = \sqrt{3}/2\ L_o$.

Only here we give a concrete explanation of this effect. Since the time between occurrences of certainty in the electron has decreased, the radius of the sphere of probability at the moment of the appearance of certainty has also decreased. And the size of the electron has decreased.

We promised to calculate exactly the change in the probability of the appearance of certainty in the probability sphere of an electron moving at a speed of c/2. The formula for the probability of occurrence of certainty is: $P = K/T^2$, where K is the probability coefficient, T is the time between occurrences of certainty in the sphere of probability. Substituting the value of the time period for a moving electron, we get:

$P = K/T^2 = K/(T_0\sqrt{(1-v^2/c^2)})^2 = 4/3\ K/\ T_0^2 = 4/3P_0$. That is, the probability of the appearance of certainty in the probability sphere of an electron moving at a speed of c/2 is one third more than the probability of the appearance of certainty in an electron at rest.

We can write this formula in another way: $P = P_0 / \sin^2\alpha$, where α is the angle between the circle points on the probability sphere and the direction of movement. With an electron speed equal to c/2, the angle α is equal to 60 degrees. The formula will look like: $P = P_0 / \sin^2 60° = 4/3P_0$.

As we will see a little later, the formula $P = P_0 / \sin^2\alpha$ is the **main formula of physics**.

That is, there is such a logical chain. The particles, emitting spheres of probability, created an electromagnetic field. Intersecting with the sphere of probability of our electron, they created points on the surface of the sphere of probability of the electron, where the probability of these points is one third higher than the probability of points in the sphere of the electron at rest. Then, when there were no influences on the electron, the sphere of probability of the electron did not intersect with the sphere of probability of other particles. An increase by a third of the probability of some points on the surface of the probability sphere led to a shift in the locus of the points of occurrence of certainty in the generalized probability sphere of the electron - a circle with a center at point C. This change in the position of the circle led to the acceleration of the electron to a speed of c / 2 in the direction connecting the center of the generalized probability sphere probability sphere, point A, and the center of the circle, point C. In the direction of AC. The angle between the circle and the direction of motion of the electron AC is 60 degrees. Since the probability of occurrence of certainty in a moving electron has increased by a third, then according to the formula $T = \sqrt{(K/P)}$, the time between appearances of certainty in an electron has decreased by $\sqrt{3}/2$ times. The electron time slowed down by $\sqrt{3}/2$ times. And since the radius of the sphere of probability at the moment when certainty appears in the electron is $R = cT$, then the size of the electron has decreased by $\sqrt{3}/2$ times.

That is, using certainty and the sphere of probability, we give such a causal interpretation of what happens to bodies with an increase in speed comparable to the speed of light.

At the moment, there are formulas of the special theory of relativity. And there is experimental confirmation of them. That is, they were originally experimentally obtained by Lorentz. But what is behind these formulas, what causes a change in the mass, energy, size, time of the electron, has not been shown. Because while it was not known what elementary particles consist of. And what determines their properties - size, mass, energy. We think of a particle as a sequence of occurrences of certainty in the spheres of probability it emits. And using **only the geometry**, we logically unfold this idea of the particle structure. And we draw logical conclusions, which are confirmed by already existing formulas.

Let's see how the energy of an electron moving at a speed of c/2 changes. $E = h\nu = h/T$, where ν is the frequency of occurrence of certainty in an electron; T is the period of time between occurrences of certainty in the sphere of electron probability; and h is Planck's constant.

$E = h/T_0\sqrt{(1-v^2/c^2)} = 2/\sqrt{3}\ h/T_0 = 2/\sqrt{3}E_0$. That is, the energy of an electron moving at a speed of c/2 is $2/\sqrt{3}$ times greater than the energy of an electron at rest.

The mass of a moving electron is from the formula $E = mc^2$:

$m = E/c^2 = E_0/c^2\sqrt{(1-v^2/c^2)} = m_0/\sqrt{(1-v^2/c^2)} = 2/\sqrt{3}m_0$. That is, the mass of an electron moving at a speed of c/2 is $2/\sqrt{3}$ times the mass of an electron at rest. This formula can be written in a different way.

With an electron speed equal to c/2, the angle α is equal to 60 degrees. Then the mass of the moving electron is: $m = m_0 / \sin\alpha = m_0 / \sin 60° = 2/\sqrt{3} m_0 = 1.1547 m_0$. It turns out that at the speed of the electron c/2, the mass of the electron has increased by 0.1547 of the rest mass. We can also calculate that at an electron speed of $\sqrt{3}/2$ the speed of light, the mass of the moving electron will be exactly 2 times the mass of the electron at rest. This is due to the fact that the circle of this electron will shift by an angle α equal to 30 degrees. And the sine of 30 degrees is equal to ½.

Inertia of bodies as a logical consequence of a change in the probability of points in the probability sphere of particles.

In this regard, consider the issue of inertia. The body is moving with speed v. If it is not affected in any way, then it will continue its rectilinear motion with a speed v. Will move by inertia. In our system of the world, any, even a small, movement of a particle, for example, an electron, indicates that the probability distribution of the appearance of certainty in the generalized sphere of electron probability has become different from the same. A circle appeared, which forms an angle α with the direction of motion. Such that the cosine α is equal to the ratio of the electron speed to the speed of light: $\cos\alpha = v/c$. It is very important here that this circle will be in this place all the time. If there are no external influences on the electron. That is, the probability spheres of other particles will not intersect with the probability spheres of an electron. And they will not change the probability of electron probability spheres. And the position of the circle will not change. In this case, without external influences, the circle - the locus of points of appearance of certainty in the sphere of electron probability, will be in the same place. The speed of the electron will be conserved. And the direction of his movement. The electron will move by inertia.

As we know, the mechanism of inertia is manifested in the fact that the greater the mass of the body, the more difficult it is to change its speed and direction of motion. The greater the inertia of this body.

Let's compare an electron and a proton. The mass of a proton is 1836 times the mass of an electron. Denote the standard probability of an electron at rest by P_e. The standard probability is the probability of the points in the electron's probability sphere at the moment the certainty occurs, provided that the probability values of all points in the probability sphere are the **same**. We know that in order to accelerate an electron to a speed of c/2, it is necessary to increase the probability of the sphere of probability of the electron by a third. The increase in the probability of an electron will be equal to: $\Delta p_e = 1/3P_e$.

Consider a proton. Denote the standard probability of a proton by P . As we know, the ratio of proton and electron probabilities is equal to 1836 squared. And equal to 3370896 times. $P = 3370896 P_e$. In order to accelerate the proton to a speed of c / 2, it is necessary to increase the probability of the sphere of probability of the proton by a third as well. The increase in the probability of a proton will be equal to: $\Delta P = 1/3P = 3370896/3 P_e = 1123632 P_e$. That is, in order to accelerate an electron to a speed of c / 2, an increase in probability is needed, equal to a third of the standard probability of an electron at rest, $1/3P_e$. And in order to accelerate the proton to a speed of c / 2, it is necessary to increase the probability of the sphere of probability of the proton by 1123632 standard probabilities of an electron at rest, 1123632 P_e. As we know, the increase in the probability of a particle arises due to the intersection of the probability spheres of this particle with the probability spheres of other particles. Therefore, to accelerate a proton to a speed of c/2, much more energy is needed, more spheres of probability from other particles, than to accelerate an electron. If we spend the same energy as for accelerating the electron, we make an increase in the probability equal to $1/3P_e$, then the speed of the proton will also increase. But the circumference of the proton will not move as much as that of the electron. Angle α will not be equal to 60 degrees. The circumference of the proton will only slightly shift from the center, and the angle α of the proton will be close to 90 degrees. And the speed of the proton will be small.

Therefore, the phenomenon of inertia is very clearly explained through the concepts of certainty and the sphere of probability.

It is important that the mechanism of correspondence between the increase in probability at some points of the electron's probability sphere and the electron's velocity is very accurate. Even to give an electron a speed of one meter per second, you need a perfectly accurate increase in probability. And displacements of a circle on absolutely exact angle. Dependent on the ratio of the electron speed and the speed of light, $\cos\alpha = v/c$. Let this angle be very small. That is, all changes in probability at points in the sphere of probability of an electron lead to exact changes in the direction and speed of the electron. Because every appearance of certainty in the sphere of probability of an electron will be probabilistic. At points where the probability is slightly higher on the surface of the probability sphere, or at points where the probability value is slightly less. And certainty appears in all directions of the sphere of probability. And in the direction of electron motion. And in the opposite direction. And sideways. But in a second certainty appears in an electron $1.25 \cdot 10^{2o}$ times. And the law of large numbers works. And if we average the appearance of certainty in the sphere of probability of an electron, then the locus of points will appear - a circle. And the location of this circle, the angle α, will uniquely determine the direction and speed of the electron. Let this speed be small, for example, 10 meters per second.

The dependence of the angle between the circle and the direction of motion of the electron, and the speed of the electron, is shown in Figure 22.

Everything that has been described works not only for the electron, but also for all elementary particles - protons, neutrons. And for bodies consisting of them. The formulas for the electron and for large bodies will be the same.

It is important to note that in the previous chapter we used **the most important formula** in physics. It shows how the probability of occurrence of certainty in a probability sphere changes when this probability sphere intersects with probability spheres emitted by other particles.

$P = P_0 / \sin^2\alpha$. Where P_0 is the probability of the particle's probability sphere when it is not affected by other particles. There is no intersection with probability spheres emitted by other particles. P is the probability of the particle's probability sphere after crossing with the probability spheres of other particles.

The electric force between charged bodies directly depends on the probability distribution on the particle probability spheres.use the main formula.

Consider electrical force. There is an electrical force between two electric charges. For example, there is a force between two electrons that causes them to repel each other. Consider this in our picture of the world. Earlier we said that all electrons have circular orbits that rotate in parallel, synchronously. See Figure 10.

Now let's make an important clarification. In fact, all electrons are divided exactly in half into two groups. In one half of the electrons, all orbits rotate strictly parallel to each other. And in the second group, the orbits of electrons are shifted with respect to the first group of electrons by an angle α. See Figure 23.

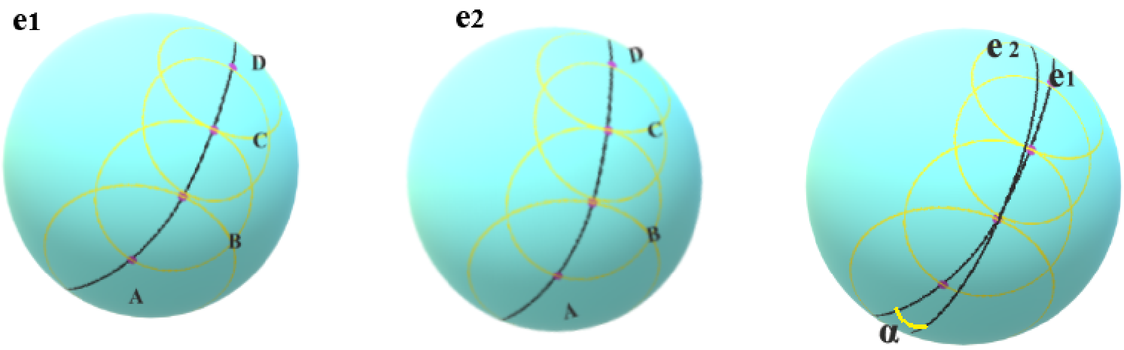

Figure 23. Electron of the first group e1 and electron of the second group e2. And the angle α between their circular orbits.

That is, in the second group of electrons, the orbits also move synchronously, but their orbits are rotated by an angle α compared to the orbits of the first group of electrons. And the electrons of the first and second groups are mixed with each other. So for **each** electron of the first group, the **neighboring** electron will necessarily be an electron of the second group. In which the orbit is rotated by an angle α with respect to the orbit of the electron of the first group. And it is important that the angle α - the difference between the orbits of neighboring electrons, is very small.

Let's take two electrons. Electron 1 is an electron of the first group, and electron 2 is an electron of the second group. The difference between the phases of rotation of the orbits in these electrons will be the angle α. These electrons will emit probability spheres - 1.25×10^{20} probability spheres per second each electron. The spheres of probability are expanding at the speed of light. These spheres of probability will intersect with each other in space. And the result of the intersections of the spheres of probability of these electrons will be nothing but an **electric field**.

The moment of expansion of the sphere of probability will be important, when certainty should appear on it. What will be important is the probability distribution at the points of the probability sphere at this point. Take electron 1. It emits probability spheres. And in each sphere of probability, after $8 \cdot 10^{-21}$ seconds from the beginning of the expansion of this sphere, certainty appears.

At this moment, the probability sphere of electron 1 intersects with a huge number of probability spheres emitted by electron 2. As a result of these intersections, there will be points with different probabilities on the surface of the probability sphere of the first electron. If we take a generalized sphere of probability, where there will be many occurrences of certainty in the sphere of probability of the first electron. Then the locus of points of appearance of certainty will appear - a circle. The center of the circle will be strictly in the opposite direction from the electron 2. Since like charges repel each other. And the location of the circle, its shift from the center of the probability sphere to the radius, will determine the speed of the electron. The speed at which electrons move apart.

It will be important how much the probability sphere of electron 1 increases after crossing with the probability sphere of electron 2. This will be according to the formula $P = P_0 / \sin^2\alpha$. And the angle α will be the angle between the orbits of electron 1 and electron 2. The difference between the phases of rotation of the orbits of electrons 1 and 2. This angle α is very small. Therefore, the factor $1/\sin^2\alpha$ is a very large value. And the interaction between electrons, the intersection of their spheres of probability gives a very large increase in probability in the sphere of probability of the first electron. Will make a big acceleration of the first electron. This is where the electrical force comes into play. Both electron 1 and electron 2 are equal. And the probability sphere emitted by electron 1 also acts on the sphere of probability of the second electron. And electron 2 will move in the same way, with the same acceleration as electron 1. Only in the opposite direction.

THE MOST IMPORTANT POINT is testing the theory in practice. Correspondence of the electrical interaction between electrons in terms of certainty and intersection of electron probability spheres with the real electric field between particles.

NOW IS THE MOST IMPORTANT POINT in this whole system of the world built on certainty and realms of probability. Verification of everything that was said.

Take a 3D modeling computer program. And we will model our two electrons in it. That is, we represent electron 1 as a circular trajectory of the emergence of certainty. In the computer version, certainty will be a point. And this orbit will rotate around its axis. And also from the places where certainty appears, we will make expanding spheres of probability - these will be just spheres. And set the thickness of the sphere so that you can see it well. For our purpose of modeling, the velocity of the sphere is not important. Therefore, for clarity, we will make the speed small. We will also make a model of electron 2. Only we will shift the orbit of the appearance of certainty in electron 2 by a small angle.

And now let's look at the result. Let's make the program so that at the intersection points of the spheres, their brightness increases. That is, the greater the probability at the point of the sphere, the greater its brightness. And the intersection of the spheres will give a certain picture. As in figure 24.

This shows the electric field lines that arise when two electrons interact. These lines of force, the electric field, are well studied both experimentally and theoretically. And they certainly reflect reality. And in our computer simulation, a picture of the interaction of electrons is shown, through the intersection of their spheres of probability. And the computer model completely coincides with the real electric field. Hence, the intersection of the spheres of probability **is the** electric field. And the certainty and the spheres of probability emitted by the particles are the very reality. In the continuation of this work, this computer model of the interaction of two electrons will be presented. In the form of the intersection of the spheres of probability emanating from these electrons.

Those who want to independently verify information about the interaction of electrons, through the intersection of probability spheres, can independently make a 3D model of this process. And look at the resulting picture.

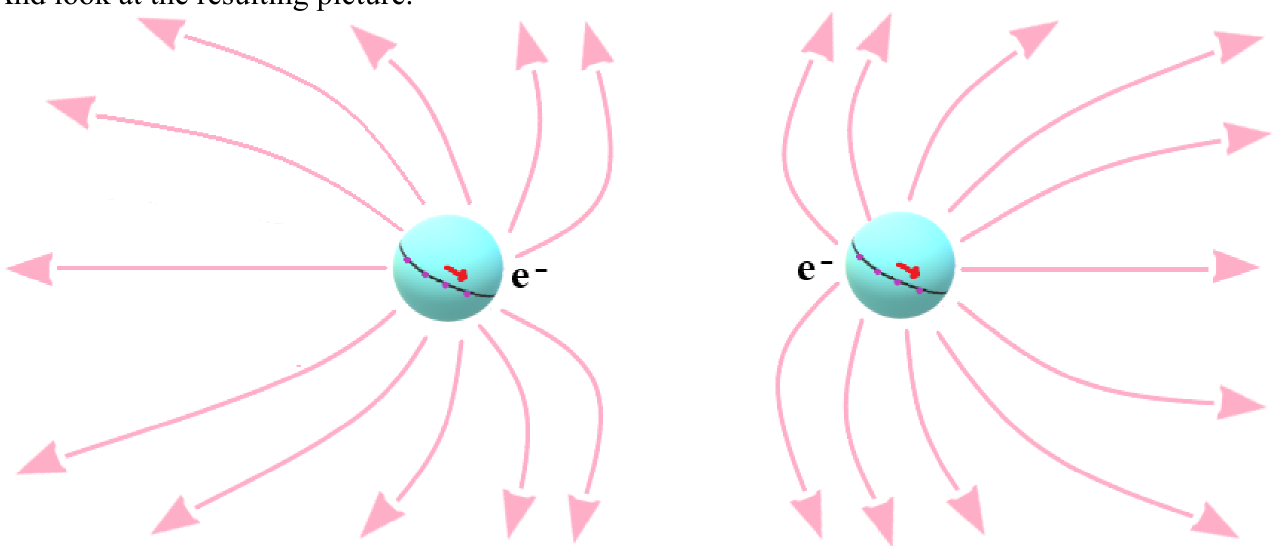

Figure 24. Electric field lines between two electrons. The movement of electrons along these lines of force is repulsion. The same lines of force are formed in 3D modeling of the interaction of two electrons as a product of the intersection of probability spheres emanating from these electrons.

Now let's take a closer look at what determines the change in probability in the electromagnetic interaction of two electrons.

First. From the angle α between the orbits of two electrons. The number $1/\sin^2\alpha$ will depend on this. Which gives the change in probability at the points of the sphere of probability. Since our angle α is constant, then $1/\sin^2\alpha$ will also be constant.

Second. From the distance between electrons. After all, the sphere of probability of electron 1 is affected by the sphere of probability of electron 2. And the sphere of probability of electron 2 can intersect with the sphere of probability of electron 1 only when it **reaches** electron 1. That is, the radius of the probability sphere of electron 2 will be equal to the distance between the electrons. $R = S$, where R is the radius of the probability sphere of electron 2; S is the distance between electrons. In this case, the probability in the probability sphere of electron 2 will be added to the probability in the probability sphere of electron 1 at the intersection points of these probability spheres. What will be the probability in the electron probability sphere 2?

$P = s_o / 4\pi R^2$, where s_o is the area occupied by certainty; R is the radius of the probability sphere of electron 2. That is, the greater the radius of the probability sphere, the distance between the electrons, the smaller the probability of the probability sphere of electron 2. The smaller the additional probability that electron 2 will transfer to electron 1 through its probability sphere. The probability is inversely proportional to the square of the radius of the probability sphere, the square of the distance between the electrons.

Let's write this in a formula.

$\Delta P \sim 1/\sin^2\alpha \; 1/R^2$. The probability difference is inversely proportional to the square of the sine of the angle between the electron orbits and inversely proportional to the square of the distance between the electrons.

Let us now look at the formula for the electric force between electrons.

$F = k\,e\,e / R^2 = ke^2 / R^2$, where e is the electron charge, $e = -1.6\ 10^{-19}$ Coulomb; k is the coefficient; R is the distance between electrons.

Let's compare two formulas. And there, and there is an inverse relationship with the square of the distance between the electrons. We also found out that the electrical interaction occurs when crossing probability spheres emanating from electrons, in which the difference between the phases of orbital revolution is equal to the angle α. The electrical force arises from the factor $1/\sin^2\alpha$. That is, in the formula for electric force, the product of electron charges e^2 corresponds to $1/\sin^2\alpha$.

A very important point. In the formulas for both electrical force and gravitational force, force is inversely proportional to the square of the distance between objects. There has not yet been a completely satisfactory, clear answer to the question why this is so. In our picture of the world, these forces correspond to an increase in probability on the probability sphere of the first particle. This increase in probability is provided through the intersection with the sphere of probability emanating from the second particle. And the probability on these spheres is inversely proportional to the square of the radius of these spheres. Which is equal to the distance between the particles. There is a clear logic in this explanation, giving an understanding of where the inverse dependence on the square of distances between objects came from.

By the way, the formulas of the electromagnetic field directly signal that there is a periodicity, a circular process in electrical and magnetic phenomena. And many physicists believe that the electric field arises as a result of the circular rotation of the electron in orbit. There is indeed a circular rotation. But not an electron. The electron is stationary. A circular orbit is a circular trajectory for the appearance of certainty in an electron. And the interaction, the intersection of the spheres of probability emanating from the circular orbits of electrons and other charged particles, and gives the electromagnetic field.

And it should be said how the state between two neighboring electrons is maintained when the angle between the phases of their orbits is the angle α. As we can see, the probability spheres of electrons intersect. And the product of their intersection is the electromagnetic field. Through the electromagnetic field, electrons interact with each other. Suppose there is a mismatch - there are slightly more electrons of the first group than electrons of the second group. Then an electromagnetic wave will pass between the electrons. And the energy of this wave will be spent on transferring one of the electrons of the first group to the second group. For this electron, the orbit of the circular trajectory of the appearance of certainty will shift by an angle α. And the balance between the electrons of the first and second group will be restored.

3D simulation of the electrical interaction between an electron and a proton as a result of the intersection of probability spheres emanating from these particles.

Consider now the electromagnetic interaction between an electron and a proton. Protons are also divided into two groups. And the phase difference of the rotation of the orbits between the protons of the first and second groups is the same angle α. The same as the angle between the orbits of the first and second group electrons. This means that the orbits of two neighboring protons will differ by the angle α. Let's denote this angle between two groups of both electrons and protons as α_0.

We said earlier that the angle between the orbits of an electron and a proton is 180 degrees. The circular trajectory of the emergence of certainty in the electron is always directed in the opposite direction of the circular trajectory in the proton. Here it is necessary to clarify that the angle between two neighboring electron and proton will be 180 degrees minus the angle α_0, $\alpha = 180° - \alpha_0$. This is the same angle α_0 between the orbits of two groups of electrons, and the same for two groups of protons. Let's calculate the value of the sine of the angle between the electron and the proton: $\sin(180° - \alpha_0) = \sin \alpha_0$.

And the probabilities of the electron and proton probability spheres, when they interact, intersect their probability sphere, will be calculated by the same formula:

$P = P_0 / \sin^2\alpha = P_0 / \sin^2(180° - \alpha_0) = P_0 / \sin^2\alpha_0$. Where α is the angle between the electron and proton orbits, and is equal to $180° - \alpha_0$.

That is, during the interaction of an electron and a proton: 1) the probability of the electron probability sphere will be inversely proportional to the square of the sine of the angle α_0; 2) and the probability of a proton will also be inversely proportional to the square of the sine of the angle α_0.

Now let's make a 3D model of the interaction of an electron and a proton. On this model, the electron will be in the form of a circular orbit of the appearance of certainty, which rotates around its axis. And the electron will emit spheres of probability from the points of appearance of certainty. The proton will also be in the form of a circular orbit of the appearance of certainty, which rotates around its axis. Only the orbit of the proton will be rotated relative to the orbit of the electron by an angle of 180 degrees minus α_0. And in the circular orbit of the proton, the distance between the appearances of certainty will be 1836 times less than between the appearances of certainty in the orbit of the electron. The proton will also emit probability spheres. There are 1836 times more probability spheres per second than an electron.

The spheres of probability emitted by an electron and a proton will intersect with each other. When crossing the spheres of probability, points will be obtained where the probabilities will be many times higher than at points in the surrounding space. These high probability points form lines that run between the electron and the proton.

The picture of the intersection of probability spheres between an electron and a proton will look like in Figure 25.

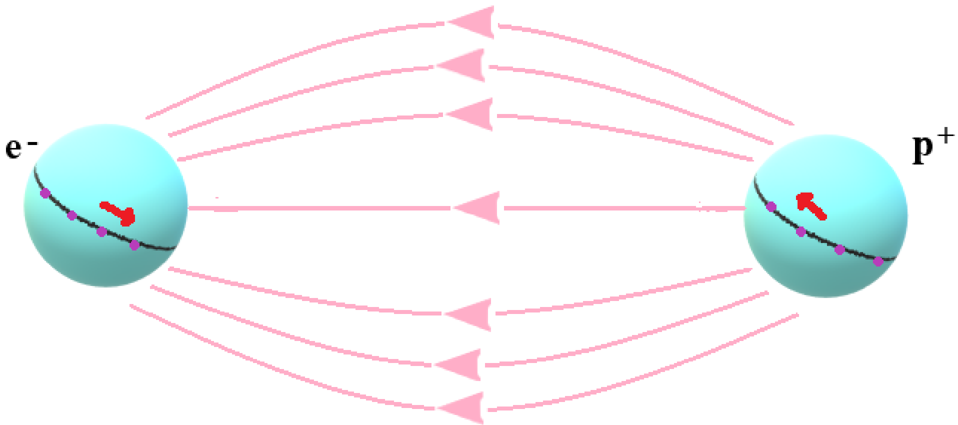

Figure 25. Electric field lines of force between an electron e and a proton p. Approach of particles along these lines of force.

And it is precisely such lines of force of the electric field that arise during the electrical interaction of an electron and a proton. This means that the model of the intersection of the spheres of probability emanating from the electron and the proton fully corresponds to the real electric field between the electron and the proton.

Let's compare figures 24 and 25. Electric field between electrons and electric field between proton and electron. They are different. And as a result of the action of the electric field, two electrons repel each other. negative charges. An electron and a proton attract. Unlike charges. And the difference in the lines of force of the electric field is that for an electron and a proton, the circular trajectory of the appearance of certainty is directed in opposite directions. With a shift by an angle α_0. And the intersection spheres of probability emanating from the electron and the proton will give such lines of increased probability, as in the figure 25.

Now consider the question of why an electron and a proton have the same charge. After all, an electron and a proton are quite different particles. The proton is 1836 times heavier than the electron. But it also has the value of electric charge. Why is that? In our theory, also the number of probability spheres emitted by an electron and a proton is different. We can compare the intersection of probability spheres emitted by two electrons and two protons. But the electric force between two electrons and between two protons is the same. Although per second between two protons there are 2*1836 = 3672 times more probability spheres than there are probability spheres between two electrons. And in theory, the probability increase on the electric field lines between two protons should be greater than the probability increase on the field lines between two electrons.

The thing is that the increase in the probability between particles is inversely proportional to the square of the sine of the angle α_0: $\Delta P \sim 1/\sin^2 \alpha_0$. And the angle α_0 **is very small**. And the very number $1/\sin^2 \alpha_0$ is simply huge. Therefore, the fact that 3672 times more probability spheres are involved in the intersection between protons than in the intersection between electrons does not play a big role. Because the number $1/\sin^2 \alpha_0$ is so large that this difference between the number of probability spheres of a proton and an electron is almost irrelevant.

It is important to note that the formula for increasing the probability $P = P_0 / \sin^2\alpha$ can be obtained purely experimentally, purely geometrically. Through 3D interaction models of probability spheres emitted by particles. Take pairs of objects - in each make circular trajectories for the appearance of points, and with the rotation of the circle around its axis. Only the phase between the rotations of the two orbits will differ by the angle α. The angle α can be changed, that is, the phases of rotation of the orbits can be shifted by different amounts. And look at the results of the intersection of spheres emanating from two objects. At different angles α between the orbits of objects. See how strongly the intersection **thicken** intersect. Depending on the alpha angle. And purely geometrically calculate the magnitude of this condensation. And it will be inversely proportional to the square of the sines of the angle α.

That is, the clustering of points will correspond to the addition of probability at the intersection of probability spheres emanating from particles. And also according to the formula $P = P_0 / \sin^2\alpha$.

The manifestation of the force of gravity through the main formula of physics.

Now consider the development of the situation. The proton approaches the electron. And combines into a hydrogen atom. The hydrogen atom is electrically neutral. Modern physics cannot show a causal relationship, how two particles with opposite charge form a neutral atom when combined. There are formulas for this process. But what is the physical meaning in them, what actually happens is unknown. At least even because it is not known what an electron and a proton are. And how do they get an electric charge.

For the first time, we can see everything in detail. Real reality. So, the proton is 1836 times heavier than the electron. And the size of a proton is 1836 times smaller than the size of an electron. The ball of the proton, obtained with a circular trajectory of the appearance of certainty in the proton, is 1836 times smaller than the ball of the electron. When connecting a proton and an electron, it turns out that a small ball - a proton, is located in the center of a large ball - an electron. Now let's see how the spheres of probability emitted by protons located inside intersect with the spheres of probability of an electron located outside.

The angle between the orbits of an electron and a proton is still $180° - \alpha_0$. And the probability value when crossing the probability sphere is $P = P_0 / \sin^2\alpha$. But **the location** relative to each other of objects emitting spheres of probability will change. The proton has become **inside the** electron. And the angle α, the interaction between the orbits of the proton and the electron has changed. Since one object is inside another, the angle between the objects is divisible by 2. 180 degrees is divisible by 2: $180°/2 = 90°$. And the angle of interaction between the probability spheres of particles will be equal to $\alpha = 180°/2 - \alpha_0 = 90° - \alpha_0$. Substitute in the probability formula: $P = P_0 / \sin^2\alpha = P_0 / \sin^2(90° - \alpha_0) = P_0 / \cos^2\alpha_0$. Since $\sin(90° - \alpha_0) = \cos \alpha_0$.

That is, the probability will be inversely proportional to the square of the cosine of the angle α_0. The same angle α_0, which is formed between the orbits of two neighboring electrons, or two neighboring protons. And we know that the angle α_0 is very small. The value is close to zero. This means that the value of the cosine of this angle α_0, which is close to zero, is very close to unity. And the value of $1/\cos^2\alpha_0$ is close to unity. **A little over one**.

And according to the formula $P = P_0 / \cos^2\alpha_0$, the probability value at the intersection of the proton and electron probability spheres will hardly change. There will be an increase in probability by a **very small** amount. Which depends on the angle α_0.

The hydrogen atom emits a proton probability sphere, and an electron probability sphere. And the intersection of the probability spheres of an electron and a proton will increase the probability at the intersections. According to the formula $P = P_0 / \cos^2\alpha_0$.

That is, if the proton ball is inside the electron ball, then the intersection of their probability spheres will give a very small increase in probability. And the hydrogen atom will be **electrically neutral**.

And in this case it will be possible to carry out 3D modeling. And see how the probability spheres of an object located inside will intersect with an object located around it. And with a phase difference of orbits of $180° - \alpha_0$. How much in this case will the lines of intersection thicken. To make it all look like a fantasy.

Now let's figure out why the neutron is an electrically neutral particle. As we said earlier, the neutron's orbit is shifted to the electron's orbit by 90 degrees. It turns out that the angle between the orbits of a neutron and a proton is still the same 90 degrees. The neutron has an important difference from electrons and protons. It has no division into groups. The orbits of all neutrons move synchronously. The angle between neutron orbits is 0 degrees.

And here, in the meantime, a solution to a classical mathematical problem appears. Consider the interaction of the probability spheres of two neutrons. By the same formula $P = P_0 / \sin^2\alpha$.

Angle $\alpha = 0°$; $\sin 0° = 0$; $P = P_0 / \sin^2\alpha = P_0 / 0$.

As we know, you cannot divide by zero. On the one hand, any number multiplied by zero becomes zero. On the other hand, the smaller the number, the closer it is to zero, and if you divide by this number, the result becomes more and more. As a result, mathematicians decided that it is impossible to divide by zero.

But we have a specific situation. There are objects with synchronous rotation of orbits. And according to the formula that calculates the probability, a situation arises when it is necessary to divide by zero.

We will carry out computer 3D modeling. Let's take 2 objects with synchronously rotating orbits, and look at the result of the intersection of the spheres that emit objects. And it turns out that there will be no thickening of the intersection lines.

As we saw in Figure 16, the two spheres intersect in a circle. And in this circle there will be a condensation, an intersection of the lines of these two spheres. And so every 2 spheres intersect in the form of circles. And when many such spheres expand, there will be many such intersections. There are many such circles.

But it turns out that if the orbits of two objects rotate synchronously, then these circles do not intersect. If there is a difference between the orbits of two objects - the phase of rotation of the orbits is shifted by an angle α, then these circles intersect. And this gives a thickening of the intersection lines. When 3, 4, 5 or more spheres intersect at one point. And the smaller the angle α between the phases of rotation of the orbits, the more the circles intersect with each other. The lines of the spheres thicken more.

But as soon as the angle between the orbits becomes equal to zero, everything changes dramatically. The circles **do not intersect** each other. There is no condensation of lines of intersection of spheres. And the increase in probability according to the formula;

$\Delta P = P_0 / \sin^2\alpha = 0$.

It turns out that if any number is divided by zero, the result will be zero. Such is the physical meaning of this mathematical formula.

So, when crossing the spheres of probability of two neutrons, there is no increase in probability. They don't repel each other like two electrons or two protons. **Therefore, the neutron is electrically neutral**.

Consider the interaction of an electron and a neutron. The angle between the electron and neutron orbits will be 90 - α_0 degrees. When an electron and a neutron interact, the probability is calculated using the same formula:

$P = P_0 / \sin^2\alpha = P_0 / \sin^2(90° - \alpha_0) = P_0 / \cos^2\alpha_0$.

And since α_0 is very small, P is close to P_0. There will be a very small increase in probability.

The same is true for the interaction of a neutron and a proton. The angle between the orbits of a neutron and a proton is: $\alpha = 90° - \alpha_0$. And the interaction probability is calculated by the formula:

$P = P_0 / \sin^2\alpha = P_0 / \sin^2(90° - \alpha_0) = P_0 / \cos^2\alpha_0$. There will be a very small increase in probability.

That is, both a neutron with an electron and a neutron with a proton interact according to the formula $P = P_0 / \cos^2\alpha_0$. And in the case when the proton is inside the electron, their interaction takes place according to the formula $P = P_0 / \cos^2\alpha_0$.

Compare this with electrical interaction. According to the formula $P = P_0 / \sin^2\alpha_0$. There $1/\sin^2\alpha_0$ is a very large number. And the interaction is very strong. But in nature there are comparatively few individual charged particles. And if charged particles appear, then unlike particles tend to each other. And they connect very quickly. If they have the same mass, like an electron and a positron, then when combined, they turn into photons. If their masses are very different, then the proton enters and settles down in the center of the electron. One way or another, all charged particles very quickly become neutral.

Now let's look at the interaction between neutral particles. Which occurs according to the formula $P = P_0 / \cos^2\alpha_0$.

The increase in probability is very small. But she is. And it increases with each intersection of the spheres of probability.

In electrical interaction, the number of probability spheres emitted by a particle did not matter. The electric charge of both an electron and a proton is the same. In the interaction of neutral particles, the picture is quite different. Each probability sphere that intersects contributes to an increase in probability. That is, at the intersection of the spheres of probability emanating from a neutron and a proton, there will be 1836 times more circles - the intersections of the spheres of probability of a neutron and a proton. Than when crossing spheres of probability emanating from a neutron and an electron. Since the proton has a mass 1836 times greater than the electron. And therefore it emits 1836 times more spheres of probability than an electron.

Now let's just say that the interaction between neutral particles determines **the force of gravity**. That is, the interaction where the probability will be determined by the formula $P = P_0 / \cos^2\alpha_0$.

Let's see what will determine the increment of probability in the interaction of neutral particles. from three factors.

From the factor $1/ \cos^2\alpha_0$. Angle α_0 between two groups of electrons; and the same angle between two groups of protons is constant. Therefore, $1/ \cos^2\alpha_0$ is a constant. And very close to 1.

From the number of probability spheres that intersect. And this number of spheres of probability is uniquely determined by the mass of particles. According to the formula ν \u003d mc² / h. Where h is Planck's constant, m is the mass of the particle.

And from the distance between the particles. It will be inversely proportional to the square of the distance between the particles. $1/R^2$. As in the case of electromagnetic interactions. Let's write this in a formula.

$\Delta P \sim 1/\cos^2\alpha \; 1/R^2 \; \nu_1\nu_2$. Where ν_1 is the frequency of the first particle. The number of probability spheres emitted per second. And ν_2 is the frequency of the second particle.

Let us now look at the formula for the force of gravity between particles.

$F = Gm_1m_2/R^2$. Where G is the gravitational constant; m_1 and m_2 are the masses of the first and second particles; R is the distance between particles.

Let's compare two formulas. The factor $1/R^2$ is the same. Both there and there is the distance between the particles. Both frequency and mass are the same: $\nu = mc^2/h$. Since c^2/h is a constant value, we can say that the frequency is the mass multiplied by a constant, by a factor.

Well, the constant G is nothing but a constant defined by the value $1/\cos^2\alpha$.

Yes, the value of $1/\cos^2\alpha$ is small. As well as the value of G. But in the gravitational interaction **each** sphere of probability emitted by a particle contributes its share to the force of gravity. And this very small value of $1/\cos^2\alpha$ is multiplied by **all** spheres of probability coming from both the first and the second object. Therefore, the larger the mass of interacting objects, the more probability spheres they emit. The more the spheres of probability intersect, and the greater the resulting increase in probability at the points of intersection of the spheres of probability.

And in the process of crossing the spheres of probability from neutral objects, lines of force between them also arise. The lines where **condensation** are the intersection of several probability spheres of these objects. And the presence of these lines of force leads to the fact that the probability of the appearance of certainty at the points of these lines **is greater** than at other points in space. And therefore certainty appears **more often** in these lines. And the trajectory of the appearance of certainty sets the trajectory of the object's movement. Therefore, objects will move along these lines of force of increased probability. Gradually getting closer.

But the lines of force of electromagnetic and gravitational interactions will have a difference. The electromagnetic interaction is determined by the factor $1/\sin^2\alpha_0$. This is a very large value. Therefore, the condensation of probability at some points will be very strong. There will be **pronounced** lines of force of the electric field. Condensation lines of the electric field probability will be with large differences in values. The probabilities at neighboring points in space will differ sharply.

The gravitational interaction will be determined by the factor $1/\cos^2\alpha_0$. The value of which differs very little from unity, a little more than 1. Therefore, the gravitational field is very uniform. The probability at neighboring points in space differs little from each other. And the lines of force of the gravitational field will be weakly expressed. But they will be - points with an additional probability.

It should also be added that it is not the mass that determines the frequency - the number of spheres of probability emitted by the particle. Conversely, the number of probability spheres emitted by a particle gives the gravitational effect it has on other bodies. The more probability spheres a particle emits, the more it attracts other bodies. The more its mass.

And the mass of a particle is determined by the formula: $m = h\nu/c^2$, where h is Planck's constant, m is the mass of the particle.

They just learned how to measure mass a very long time ago. And the fact that all particles, all bodies radiate probability spheres is known only now. And frequency - the number of spheres of probability emitted by a particle - has not yet been measured. But there is an exact correspondence between mass and frequency. And what is unknown, the frequency, we will calculate through what we can measure - through the mass.

For a very long time, the key question for physics was how to combine the electromagnetic and gravitational interactions. There were no points of contact.

Everything is solved if both the electromagnetic and gravitational interactions are considered through the concept of probability. Then both of these interactions will occur according to the same formula: $P = P_0 / \sin^2\alpha$. Only the value of the angle α in the electromagnetic and gravitational interaction will differ by 90 degrees. For electromagnetic interaction, this will be $\alpha = \alpha_0$ - the angle between the orbits of two charged particles. For gravitational interaction $\alpha = 90° - \alpha_0$. And the electromagnetic interaction will be determined by the factor $1/\sin^2\alpha_0$. And gravitational - by the factor $1/\cos^2\alpha_0$.

Calculation of the fundamental constant - the angle α_0.

Based on this, this angle α_0 can be calculated. There are 3 possibilities for this. 1) The gravitational constant G depends on $1/\cos^2\alpha_0$. The electromagnetic constant ε_0 is from $1/\sin^2\alpha_0$. Having carried out mathematical transformations, it may be possible to calculate the angle α_0.

2) The electric force between electrons is $4.175\ 10^{42}$ times greater than the gravitational force between them. The electrical force depends on $1/\sin^2\alpha_0$. Gravity - from $1/\cos^2\alpha_0$. The ratio of electrical force to gravitational force can be expressed as the ratio:

$1/\sin^2\alpha_0 /(1/\cos^2\alpha_0) = \cos^2\alpha_0 / \sin^2\alpha_0 = \mathrm{ctg}^2\alpha_0$. That is, the ratio of the electric and gravitational forces depends on the cotangent of the angle α_0.

3) Experimentally calculate the value of the angle α_0. How the lines of force of the electric field are located in space during the interaction of charged particles is known. Carry out 3D modeling of electrical interaction between particles. Through the intersection of the spheres of probability emanating from the particles. So, as shown above. And select such values of α_0 so that the lines of force in the 3D model with probability spheres exactly coincide with the lines of force of the electric field.

Perhaps, it will be possible to determine the angle α_0 even in several ways. And everywhere the angle α_0 will be the same. If this happens, then this will be an essential proof of the theory of certainty.

Nuclear Forces as a Change in the Geometry of the Intersection of Proton and Neutron Probability Spheres.

The nature of nuclear, strong interactions is very mysterious. In order to understand this, we first give some bare facts related to nuclear interactions.

Protons are like charged particles. And if they are located next to each other, then they repel each other with a very large force. Inside the nucleus of an atom, they behave differently for some reason. They don't repel each other. Do not fly away from the nucleus of an atom. Atoms are stable. There are also neutrons in the nucleus of an atom. And the number of neutrons is about the same the number of protons in the nucleus. The thought immediately arises that neutrons somehow stabilize the behavior of protons in the nucleus. They help prevent protons from repelling each other inside the nucleus. And a proton-neutron pair, when interacting with another proton-neutron pair, no longer scatter, but form a strong connection. That is, there are already forces of attraction, not repulsion. This is all confirmed by the fact that the basic structural unit of the nucleus of any atom is an alpha particle. It has two protons and two neutrons. In most cases, atoms emit alpha particles. That is, it is precisely 2 protons and 2 neutrons that are most tightly bound in the nucleus of any atom. Therefore, we will consider the α-particle in order to understand how everything works.

As we found out, the probability in the interaction of particles is determined by the formula $P = P_0 / \sin^2\alpha$. The spheres of probability emanating from the particles intersect and form lines of force - lines where the probability thickens, increases, due to the intersection of the spheres of probability. And the **these lines of force** particle movesThat is, knowing how these lines of force pass, it is possible to determine with accuracy how **move** this particle, or two neighboring particles,They will approach or repel. These field lines can be determined geometrically - by 3D modeling of the intersection of particle probability spheres. Or mathematically. Based on the formula $P = P_0 / \sin^2\alpha$. To do this, you need to know the angle between the orbits of the two particles. Everything depends on the angle α.

Thus, neighboring electron and proton have an angle $\alpha = 180° - \alpha_0$ between them. And the factor is $1/ \sin^2\alpha = 1/ \sin^2(180° - \alpha_0) = 1/ \sin^2\alpha_0$. And between them there are lines of force that make them approach each other.

But when the proton is inside the electron, everything changes. There will be another geometry of interactions between the spheres of probability of an electron and a proton. Other lines of force arising from the intersection of the probability spheres of the proton and electron. They will be different from the lines of force between the proton and the electron when they were side by side, not connected.

Now let's look at the interaction of a proton and a neutron. If they are not connected, they are nearby, then the angle α between them is equal to $\alpha = 90° - \alpha_0$. And the factor is $1/ \sin^2\alpha = 1/ \sin^2(90° - \alpha_0) = 1/ \cos^2\alpha_0$. That is, the value $1/ \cos^2\alpha_0$ is very close to unity. And there is little interaction between them. The factor $1/ \cos^2\alpha_0$ gives the force of attraction between the proton and the neutron. This force is very small. But the main thing is that there is no electric force between them, they do not repel each other. A little, but they are attracted. In reality, the neutron moves through space at some speed. And it is this kinetic motion of the neutron that will determine its interaction with the proton. Not the force of attraction between them. In order for a proton and a neutron to combine, the neutron must have a certain speed. That is, the neutron must slow down compared to the speed with which it flies out of the nucleus of atoms during radioactive decay.

The important thing is that when the proton and neutron are connected, there will be certain lines of force between them. Other than the lines of force that were between them when they were unconnected, next to each other. Just like the lines of force between a proton and an electron inside an atom are different than the lines of force when they are not connected. These field lines arise due to the intersection of the probability spheres of the neutron and proton. That is **pure geometry**. And what kind of lines of force these are can be determined by 3D modeling of the intersections of the proton and neutron probability spheres. Knowing that the angle between the orbits of a proton and a neutron is $90° - \alpha_0$. And the ratio of time periods T between occurrences of definiteness in the particle. The ratio of the proton and neutron time periods will be $T / T = 1838/1836 = 919/918$. That is, the period of time for a proton will be slightly longer than for a neutron. And the frequency of occurrence of spheres of probability will be slightly less.

The fact is that when a proton and a neutron combine, lines of force will appear. As a result of which the proton and neutron will approach each other. There will be an attractive force between a proton and a neutron. Due to a change in the geometry of the intersection of the probability spheres emitted by the proton and neutron. Because the proton and neutron have united. And their orbits are out of phase by 90°. See drawing. That is, nuclear forces arose between the proton and the neutron.

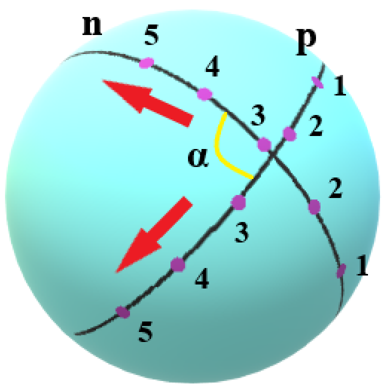

Figure 26. The ratio of the orbits of the proton p and neutron n in the nucleus of an atom. The angle between the orbits is $90° - \alpha_0$.

The combination of a proton and a neutron is a deuterium atom. A hydrogen atom with an extra neutron. Heavy water. Now let's see what happens if we combine two deuterium atoms, two proton-neutron pairs.

If two deuterium atoms are nearby, not connected, then there will be an electric repulsive force between the two protons. But, let's say, additional energy was applied to the deuterium atoms, the electric repulsion force was overcome, and two deuterium atoms united. It turned out the nucleus of the helium atom, or α-particle. It has 2 protons and 2 neutrons.

It is important that now the **geometry** of the interaction of these protons and neutrons will be different due to the mutual position of the orbits of the proton and neutron. Their spheres of probability will intersect. And as a result of the intersection, lines of force will be formed, points of condensation of probability. And these lines of force will be directed so that the protons and neutrons in the α-particle will be **attracted**. That is, **pure geometry** and nothing more. This is the whole physical meaning of nuclear interactions. Due to the change in the mutual arrangement of the orbits of protons and electrons, the pattern of intersections of the probability spheres of these particles has changed. And new areas of probability condensation appeared - lines of force between particles. And these lines of force are directed towards the convergence of particles, and not towards divergence. And the trajectory of the emergence of certainty in the particle passes in accordance with the lines of force, points of condensation of probability. And the particles move along these lines of force. That is, in an α-particle, protons and neutrons approach each other.

The law of conservation of energy as a consequence of the law of redistribution of the frequency of occurrence of certainty - the moments of existence itself.

Let's step aside a little. Consider the law of conservation of energy. Certainty every time in one place there is a quantum of time t_0 - always the same amount of time. This number is very small. But it has a definite, **final** meaning. Let's calculate how many times per second certainty appears. Let us calculate the general frequency of occurrence of certainty at all points of the Universe. This is determined by the formula $\nu_0 = 1/t_0$ Hertz. Since the value of the time portion is very small, the frequency ν_0 is a very large value. But the important thing is that it is an exact, constant value. It is impossible to change it by any unit. Just for the sake of an example, let's assume that the value of the time quantum t_0 is 10^{-80} seconds. Then the total frequency of occurrence of certainty is $\nu_0 = 10^{80}$ times per second. And not once more, not less. It will always be a constant value. And in a second certainty can appear in a strictly defined number of electrons, protons, neutrons, photons. For example, in each electron certainty appears $1.25 \cdot 10^{20}$ times per second, in a proton - $2.3 \cdot 10^{23}$ times per second. And if so, then there is a limited number of electrons, protons and other elementary particles. So that certainty can appear in them. That is, there is no place for an additional number of electrons or other particles, **frequency of** certaintyThere are only a finite number of occurrences of certainty. And they must be divided into all particles. For a larger number of particles - consumers of frequency, this frequency simply does not exist. You can only redistribute the frequency. That is, the electron accelerated to a speed of $\sqrt{3}/2$ of light - and the frequency of occurrence of certainty in this electron doubled. Due to the fact that other particles gave up their frequency to accelerate this electron. Their frequency has decreased. Or the neutron decayed into a proton, an electron, and an electron antineutrino. And the frequency of the neutron was divided between these particles.

And if we look at it more broadly, then the appearance of certainty is an act of being. Each time, appearing in some particle, certainty gives it existence. How a beam of electrons hitting a pixel on the screen of a cathode ray tube makes that dot glow—gives it life. And there is an enlargement - the hit of certainty in the electrons, protons, neutrons of some object - gives this object existence. So, in a cat weighing 2 kilograms, certainty appears $2.72 \cdot 10^{50}$ times per second. According to the formula ν \u003d mc^2 / h. That is, $2.72\ 10^{50}$ times per second the cat exists.

And a consequence of the limited frequency of occurrence of certainty is **the law of conservation of energy**. Since energy is the frequency of occurrence of certainty. This is expressed in the formula $E = h\nu$. So, if, for example, the frequency ν_0 of the appearance of certainty is 10^{80} Hertz. Then the total energy of the Universe is equal to $6.62\ 10^{46}$ Joules. And this energy can only be **redistributed**. It cannot be increased or decreased. Therefore, the law of conservation of energy is a law of paramount importance. And the fact that it acts strictly and everywhere only confirms its importance and truth. But the theory of certainty showed what the reason for this law is. His need.

And here it is worth adding that when explaining a new physical phenomenon, the first criterion of truth is to check whether this theory complies with the law of conservation of energy. There can be no compromise here.

For example, virtual particles have been introduced into the theory to explain strong interactions. Which can violate the law of conservation of energy, take energy from nowhere. This violation of the law of conservation of energy casts doubt on such a design. This law should work in any version, both for virtual and real particles.

If we pass to nuclear interactions from the standpoint of certainty and the intersection of the spheres of probability, then there is no violation of the law of conservation of energy. And there aren't even any virtual particles. The change in the field lines of the intersection of the probability spheres of protons and neutrons fully explains nuclear interactions. No virtual particles. And other extra items.

And more about energy. What is the meaning of Planck's formula: $E = h\nu$. Energy can be thought of as the influence of some objects on others. The more energy the first object transferred to the second, the more it can affect it. Change its speed, movement, disperse, and so on. In certainty theory, a particle can affect another particle only with the help of its sphere of probability. Its probability sphere, intersecting with the probability sphere of another particle, changes its probability. And as a result, it changes the trajectory, the speed of the second particle. Therefore, the more probability spheres of the first particle intersect with the probability sphere of the second particle, the more the probability of the probability sphere of the second particle will change. And the impact on the second particle will be stronger. That is, the number of probability spheres emitted by a particle uniquely corresponds to the frequency of occurrence of certainty in the particle. This is the physical meaning of the formula $E = h\nu$. The energy of a particle is an expression of the number of probability spheres emitted by that particle.

It should be noted that the law of conservation of energy is equivalent to **the homogeneity of time,** that is, the independence of all laws describing the system from the moment in time at which the system is considered. This follows from Noether's theorem, according to which each conservation law uniquely corresponds to one or another **symmetry** of the equations describing a physical system. For the law of conservation of energy, this is the symmetry of the time translation equations. That is, in physics there is a proven connection between the law of conservation of energy and time. But only the introduction of the Absolute time, the quantum of time, shows that the conservation of the Absolute time and the conservation of energy are one and the same.

Weak interaction in terms of certainty and sphere of probability.

Let's move on to the fourth type of interaction, the weak interaction. It is associated with the processes of beta - decay of atomic nuclei and weak decays of elementary particles. In particular, this is the decay of a neutron into a proton, an electron, and an electron antineutrino.

We can say that here, too, all processes follow the formula $P = P_0 / \sin^2\alpha_0$. And you can very clearly, geometrically, show the whole process. As the emergence of lines of force due to the intersection of the spheres of probability of particles. And the transformation of a particle from one to another due to a shift in the angle of the orbit by 90 °.

For those who are interested in a method for determining any interactions, as a consequence of the intersection of the spheres of probability emitted by particles, one can recommend to carry out a 3D simulation of the decay of a neutron into a proton, an electron and an electron antineutrino.

All actors are assigned. All the roles, the possibilities of the actors are known. Anyone can become Shakespeare. And play a scene from the life of elementary particles. To make such an interpretation of the plot, which will show what was previously hidden. And show new possibilities. Computer simulation, reflecting the processes of weak interaction, will be presented in the continuation of this article.

The transformation of the marble of geometry into a tree of matter. Dreams of a titan about a unified theory.

So, for all four interactions. It turns out that they all have the same basis - the intersection of probability spheres emitted by particles. And the appearance as a result of this lines of force - condensations of probability. And the movement of particles along these lines of force. And all interactions are based **on the same formula** $P = P_0 / \sin^2\alpha_0$. In these interactions, **only**the value of the angle α changes. Depending on the relative position of the orbits of these particles.

Moreover, there is **only one** interaction between objects. Particles emit probability spheres; these probability spheres intersect; due to the intersection of the spheres of probability, concentrations of probability appear - lines of force; particles move along these lines of force. And this interaction corresponds to only one field - the field of probability. Which is created due to the intersection of probability spheres emitted by particles. Just because of what particles we consider as participants in the interaction, the probability field also changes - the pattern of the intersection of the probability spheres of these particles. From what will be the angle between the orbits of the interacting particles, there will be such a picture of the intersections of the spheres of probability of these particles.

If we consider the interactions of charged particles, then the angle between their orbits will be equal to α_0. And there will be one field of probability - electromagnetic interaction. If we consider neutral particles, there the angle α is equal to 90 - α_0 degrees. Another field of probability is the gravitational interaction. If the particles are connected together in the nucleus of an atom - the third field of probability. Nuclear, strong interactions.

Today, in physics, the key task is to combine all four types of interactions. But there is a lack of common grounds for such an association. Something that would unite different objects of interaction: different particles, different fields, different forces.

And in the theory of certainty, on the contrary, initially there is **one** interaction. Probability based. Intersections of spheres of probability. And individual interactions are singled out and of this single interaction, by considering individual variants of this interaction. That is, in the theory of certainty, the union of all four types of interaction organically exists.

And it should be noted that indeed, such different types of interaction as electromagnetic, gravitational, nuclear, weak, can be combined only on the basis of something common that is present in all four cases, a common basis. The only logical version of this general is only being, existence itself. Through the quantum of time. And the probability of the appearance of this quantum of time, being.

There is a thought here that Albert Einstein might have liked the theory of certainty. He devoted the second part of his scientific life to the search for a general theory. Explaining these various forces. As Einstein said, his goal was to combine the marble of geometry with the tree of matter. That is, in order to explain all the diversity of physical interactions in this general theory with the help of geometry.

This is what the theory of certainty is based on. She explains various physical phenomena using **only geometry**.

Transform different particles into each other.

When studying particles in accelerators, interesting things began to happen. The particles were accelerated to high speeds and energies, and collided. It could be assumed that they would crumble into pieces. But something else happened - some particles began to turn into others. More massive. After all, when accelerating, they received additional energy and mass. Formulas for the mathematical description of these processes have been found.

But what lies behind these formulas is unknown. After all, it is not known what an elementary particle consists of. Therefore, it is not known what happened before the transformation of the particle, and what happened after - when another particle appeared. And what happened during particle transformation.

The theory of certainty gives an answer to the question, what is an elementary particle. This is a circular trajectory of the emergence of certainty in the particle. And this orbit rotates around its own axis. A particle has only two main parameters. The time T between two occurrences of certainty in a particle, (inverse to it will be the frequency ν of the appearance of certainty in a particle). Its mass depends on the frequency of occurrence of certainty in a particle. And the phase of rotation of the orbit around its axis. If the orbit of rotation of the electron is taken as the standard, then the angle α will be the angle between the orbit of the electron and the orbit of the given particle. The electrical charge of the particle depends on this phase of orbital rotation. It will be negative, positive, or neutral.

Now, let's take a particle and increase its frequency of occurrence of certainty, that is, increase its mass. So that it matches the mass of the heavier particle, particle 2. And we shift the orbit of this particle 1 so that it matches the orbit of particle 2. Then we **turn** particle 1 into particle 2. This is exactly what happens in the accelerator. By adding energy to particle 1, we add frequency, up to the level of particle 2. And when particles collide, their orbits simply shift by the appropriate angle. And one particle turns into another.

Absorption of a photon by an electron.

We also consider the process when an electron absorbs an electromagnetic wave. First, an electromagnetic wave moving at the speed of light must somehow **connect** with an electron. So that the electron can absorb it. From everyday experience, it is obvious that for two objects moving at speeds to combine, their speeds must be the same at the time of the union. At the moment, physics says nothing about the speed of an electron in an orbit in an atom. There is no such data.

As we said, the electron is a ball. Obtained as a result of the circular trajectory of the appearance of certainty in the electron, and the rotation of the orbit around its axis. And if we take a hydrogen atom, then the electron ball simply absorbs the proton ball. The ball of the proton is in the center of the ball of the electron. And the electron is **stationary**. His ball is not moving anywhere. That is, **fully** the laws of classical physicsAfter all, if we assume that a negative electron revolves around a positive proton, then the electron will move with acceleration. Constantly lose energy, and having exhausted energy, it will fall on a proton. In nature, we see a stable combination of an electron and a proton in a hydrogen atom. At one time, Niels Bohr, by a strong-willed decision, ordered the electron not to lose energy when rotating around a proton.

And I had to admit that the electron, and indeed all elementary particles, move differently from objects accessible to human perception. The electron moves in jumps, discretely. It somehow jumps from one place to another. Unlike continuous motion in classical mechanics. Formulas of **quantum mechanics**. First, the equations of the Heisenberg matrices. Then the Schrödinger wave equation. And here it has already appeared and the main role is played by **probability** of the appearance of an electron at some point in space. That is, the **probabilistic** motion of the electron was accepted. In the theory of certainty, the ball itself - the electron is motionless. And when a ball, an electron, moves, it moves according to the laws of classical mechanics. But the appearance of certainty in an electron, the trajectory of the appearance of certainty in an electron completely depends on the probability. From how the probability values are distributed at the points of the electron probability sphere at the moment of the appearance of certainty. At which points the probability is greater, certainty is more likely to appear there.will depend on this **trajectory** emergence of certainty in the electron

Let's compare 2 pictures.

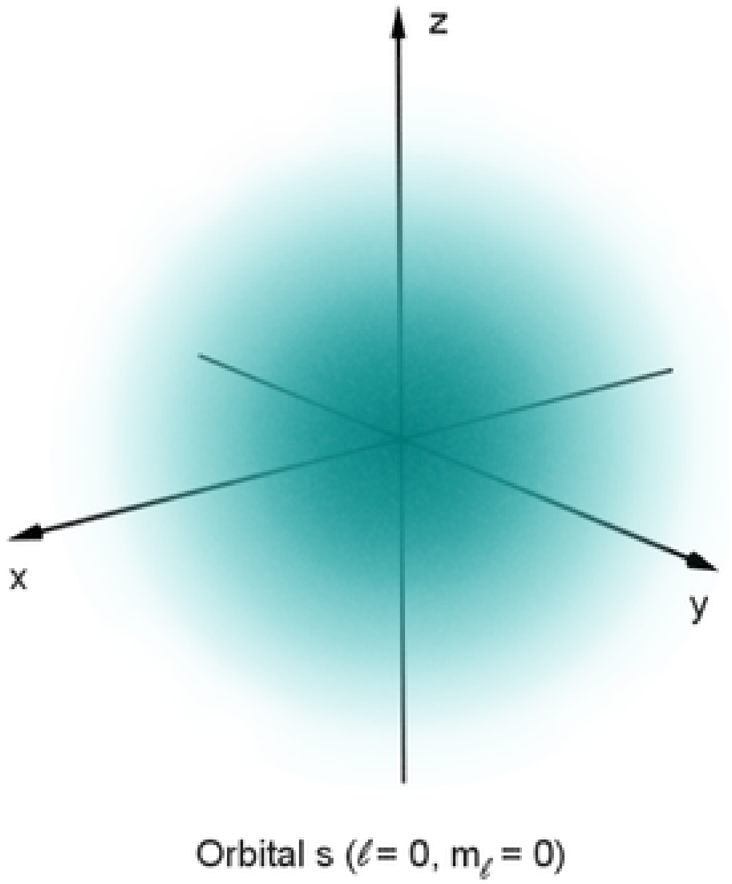

Figure 27. Probabilistic picture of the location of a single electron in an atom in orbit s.

It shows how the electron is represented by modern physics. Specifically, the only electron in an atom in orbit s. In fact, these are just points of the probabilistic appearance of an electron in orbit s. This distribution of electron occurrences is calculated using the Schrödinger wave equation. There is something like a ball. And the probabilities of the appearance of an electron are distributed in it. All these occurrences of the electron are discrete—separated from each other. It is important that there is no causal relationship between these appearances of an electron. How the appearance of an electron at some point on the ball depends on the previous appearance of the electron. Modern quantum mechanics gives only a probabilistic distribution of the appearance of an electron in space. Events following each other in time - the appearance of an electron, are in no way connected with each other **in space**.

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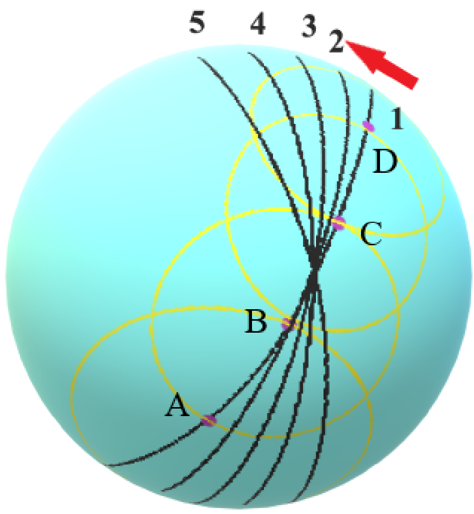

Figure 28. The trajectory of the emergence of certainty in the electron.

Figure 28 (a repeat of Figure 9) shows the electron as it is represented by the theory of certainty. The electron will also be in the form of a ball. But in modern physics, the appearance of the electron will constitute the ball. And in the theory of certainty, the ball-electron itself will consist of appearances of certainty. In modern physics, the appearance of an electron will occur according to the laws of probability. In our picture of the world, certainty also appears strictly according to the laws of probability. Because the appearance of an electron in quantum mechanics, and the appearance of certainty in our theory, are discrete phenomena. Each event is separate from each other.

And there is a very important difference in the two ideas about the electron. In our picture of the world there is a strict causal relationship between the appearance of definiteness in the electron. Each appearance of certainty is separate. But the place **next** occurrence of certainty is known - at one of the points on the surface of the expanding sphere of probability. And the time of the next appearance. Which depends on the speed of the electron, its total energy.

$T = 1/\nu = h/E = h/mc^2$, where m is the electron mass.

Point B - the current appearance of certainty in the electron, depends on point A - the point of the previous appearance of certainty in the electron.

So, there is a specific sequence of occurrences of certainty in the electron. This sequence creates a trajectory for the emergence of certainty in the electron. This trajectory is closed in a circle, and the circle rotates around its axis. And the whole trajectory results in a ball - the electron itself.

Even the information about the probability distribution of the appearance of an electron, which is provided by quantum mechanics, gives a lot for science and technology. With its help, the forces of interaction between electrons on the outer shells of simple atoms are calculated. And the strength of the chemical bonds of simple molecules is calculated. All microelectronics is based on this information. And much more.

But the fact that the theory of certainty makes it possible to study **the sequence** of events—the appearance of certainty in an electron—gives a qualitative leap in the study of electrons and other elementary particles. And in predicting their interactions.

Our picture of the world gives more information about the electron. And it gives the main thing - a causal relationship between the sequence of events, between the appearances of certainty in the electron. This means that the theory of certainty makes it more possible to predict the properties and behavior of the electron. And forecasting, calculating future events is the main task of physics.

Let us return to the absorption of an electromagnetic wave by an electron. To the need for the same speed of an electromagnetic wave and an electron. The speed of the trajectory of the appearance of certainty in an electromagnetic wave is known. It is equal to the speed of light. And the speed of the trajectory of the emergence of certainty in the electron is known - also the speed of light. Because both there and there, the sphere of probability expands at the speed of light. That is, in our picture of the world, the condition of the same speed is met for combining two objects. And here the very process of unification of an electromagnetic wave and an electron is clear. An electromagnetic wave approaches the electron at a distance R_e equal to the radius of the electron's probability sphere at the moment when certainty appears in the electron. At the moment when the sphere of probability of an electron expands to a radius R_e, certainty must appear on the surface of this sphere of probability, at some point. At this time, the probability sphere of the electromagnetic wave intersects with the probability sphere of the electron. In the form of a circle. The probability of the circle points P will be equal to the sum of the probabilities of the electron probability sphere and the electromagnetic wave probability sphere.

$P = P_e + P_x$, where P_e is the probability of the electron probability sphere, P_x is the probability of the electromagnetic wave probability sphere. At this point, certainty appears. It appears at that point of the sphere of probability of the electron, where the greatest probability. The greatest probability is at the points of the circle where the probabilities of the sphere of the electron and the sphere of the electromagnetic wave intersect. Therefore, certainty will appear at the point of the circle - the intersection of the spheres of probability of an electron and an electromagnetic wave. And at this moment there will be an absorption of an electromagnetic wave by an electron. And transferring the energy of an electromagnetic wave to an electron. How? The value of the probability at the point where certainty appears is greater than the value of the probability at the previous point of appearance of certainty in the electron. And the time T of the next occurrence of certainty will change. The time T between occurrences of certainty in an electron is calculated by the formula: $T = \sqrt{(K/P)}$, where P is the probability at the point of the previous occurrence of certainty. Before the absorption of an electromagnetic wave, the time of an electron was equal to $T = \sqrt{(K/P_e)}$, where P_e is the probability of occurrence of certainty in the electron's probability sphere. When absorbing an electromagnetic wave, the probability at the point of appearance of certainty (the point of the circle) increased: $P = P_e + P_x$. And the electron time will be equal to $T = \sqrt{(K/P)} = \sqrt{(K/P_e + P_x)}$. The chance has increased. The time between appearances of certainty in the electron has been reduced. The frequency of appearances of definiteness in the electron has increased. And according to Planck's formula $E = h/\nu$, the energy of the electron has increased.

Now consider what electromagnetic waves an electron can absorb. The trajectory of the appearance of certainty in an electron is a closed orbit. Let's assume it's a circle. The distance between occurrences of certainty in an electron is equal to R, the radius of the sphere of probability at the moment of the appearance of certainty. Obviously, in order for the trajectory of the appearance of certainty in an electron to be closed in a circle, the distance between the appearances of certainty must fit exactly into this circle. Let us designate the length of the circle, the closed trajectory of the emergence of certainty in the electron as L. Then $L/R = N$, where N is a natural number. That is, on this circular trajectory, **an integer** number of distances between the occurrences of certainty must fit. That is, an integer number of cycles of the appearance of certainty in an electron should fit.

We know that an electron absorbs an electromagnetic wave only when it is in an atom. Take, for example, the hydrogen atom. For an arbitrary example, let's assume that exactly 100 distances R between occurrences of certainty in the electron are placed in the circular trajectory of the appearance of certainty in this electron. N = 100. That is, for one circular revolution of the trajectory, certainty will appear on this trajectory 100 times. Suppose an electromagnetic wave is incident on an electron. What waves can an electron absorb? An electromagnetic wave with only such a wavelength that in this electron in a circular orbit there is an integer number of distances between occurrences of certainty. Therefore, an electron in an atom absorbs electromagnetic waves with a strictly defined wavelength.

Let's say that our electron's distance between appearances was $R = 2.43 \cdot 10^{-12}$ meters. Using Planck's formula, we calculate the total energy of an electron: $E = h\nu = h/T = hc^2/R = 8.275\ 10^{-14}$ Joules. Suppose this electron has absorbed the corresponding electromagnetic wave. And on its circular trajectory certainty appears 102 times. N = 102. The distance between occurrences of certainty, the radius of the probability sphere will decrease. Let's say R becomes equal to $2.38\ 10^{-12}$ meters. Then the electron energy will be equal to: $E = hc^2/R = 8.449\ 10^{-14}$ Joules. The energy difference will be $0.174\ 10^{-14}$ Joules. This difference will be equal to the energy of the electromagnetic wave absorbed by the electron $E_x = 0.174\ 10^{-14}$ Joules. From this we calculate the frequency of the electromagnetic wave: $\nu_x = E_x / h = 2.628\ 10^{18}$ Hertz. The length of this wave will be equal to $R = cT = c/\nu = 1.14\ 10^{-10}$ meters. That is, in order for this electron to increase the number of occurrences of certainty by 2 per one revolution of the circular trajectory, it is necessary to absorb an electromagnetic wave with a wavelength of $1.14\ 10^{-10}$ meters.

This principle is reflected in quantum mechanics. In quantization of orbits of electrons in an atom. To simplify, we assumed that the closed orbit of the emergence of certainty in the electron is a circle. And when the circle rotates around its axis, you get a ball. The full trajectory of the emergence of certainty in an electron is a ball.

In fact, an orbit doesn't have to be a circle. Maybe an ellipse. And other figures. The main rule is that this orbit must be **closed**.

And for the full trajectory of the appearance of certainty in an electron, 2 conditions must be met: 1) A closed trajectory of the appearance of certainty in an electron; 2) This closed trajectory **rotates** around its own axis. And as a result, the full trajectory of the appearance of certainty in an electron can be not only a ball, but also other **figures of rotation**. That is, the electron will represent various figures of rotation.

It is important to note that the higher the energy level of an electron, the **more complex** figure of rotation. At its lowest energy level, an electron in a hydrogen atom is a ball. When the corresponding electromagnetic waves are absorbed, the energy of the electron increases. It moves to higher energy levels. The shape of his rotation figure becomes more and more complex. In some ways, we can say that additional energy is spent on **complicating** the shape of the electron rotation figure.

Chemical bonds between atoms in terms of the theory of certainty.

Consider the question of why electrons in the outer shells of atoms are attracted to each other. And this attraction binds atoms into molecules. After all, electrons have the same charge. And the electric field arising between the electrons should lead to the repulsion of the electrons. And they are getting closer.

As we have already said, electrons can be in different energy states. And depending on the energy state of the electron, the **form of a** closed trajectory appearance of certainty in the electron. And since this trajectory rotates around its axis, the form **of the rotation figure**. That is, the shape of the electron will change.

Comes into play again **pure geometry**. Take the interaction of an electron in the outer orbit of the first atom, electron 1. And an electron in the outer orbit of the second atom, electron 2. Electron 1 will represent some particular figure of rotation. And this figure of rotation will be formed by a closed orbit of the appearance of certainty; and this orbit will rotate around its own axis. And from all the points of appearance of certainty on this trajectory, the spheres of probability will expand. Similarly, electron 2 will represent another figure of rotation. And from the points of occurrence of certainty in electron 2 will come spheres of probability. And the intersection of these spheres of probability emanating from two electrons will form lines of force. Probability Condensation Points.

And it will depend on the shape of the electrons, the shape **figures of rotation of** both electrons, how the spheres of probability of these electrons will intersect. The type and direction of these lines of force will depend. These lines of force will cause the electrons to either repel or be attracted. Pure geometry works.

In nature, things will be a little more complicated. Take the interaction of hydrogen and chlorine atoms. The outer shell of the chlorine atom has 1 electron. And the electrons on the outer shells of the atom have a high energy level. And the complex shape of their figures of rotation. Therefore, an electron on the outer shell of the chlorine atom will have a complex shape of a rotation figure. And it emits spheres of probability from the points of appearance of certainty on its trajectory.

And the hydrogen atom has one electron. At the lowest energy level, the electron will be in the form of a ball. And the hydrogen electron also emits probability spheres. And these spheres of probability intersect with the spheres of probability of the electron on the outer shell of the chlorine atom. And the result is lines of force. And these lines of force are directed from the electron of hydrogen to the electron of chlorine. And the certainty that appears in the hydrogen atom is more likely to appear on the points of these lines of force. And the electron of the hydrogen atom will approach the electron of the outer shell of the chlorine atom. And together with the electron, the proton will also approach. That is the whole hydrogen atom. And, thus, the hydrogen and chlorine atoms combine into one molecule of hydrochloric acid. HCl. And all this through pure geometry.

Physicists have always sought to know the shape of electrons on the shells of atoms. So far, this has only been calculated for one electron, the electron in the hydrogen atom. And only at low energy levels of the electron of the hydrogen atom. To calculate according to the formulas existing in physics, a very large computing power of computers is needed. And to calculate atoms with two or more electrons, helium and above, the more powerful computers are not enough.

The theory of certainty gives a different idea of the essence of elementary particles. And with the help of pure geometry. Which is ideal for computer programming. Therefore, using the principles of the theory of certainty, it will be much easier to calculate the shapes of the rotation figures that an electron in an atom becomes. On different electron shells of the atom, and different energy levels. And the calculation of the interaction between the electrons of different atoms will be much simpler. It will be possible to calculate lines of force, points of condensation of probability, between different atoms. And from this the force of chemical interaction between atoms. And the shape of the molecules obtained as a result of the combination of atoms. And **predict** their chemical and physical properties. That is, it will become possible purely theoretically, with the help of computer simulation, to calculate and predict various physical and chemical phenomena.

This will be a breakthrough in the study of nature by several orders of magnitude.

Also in the nucleus of an atom, both the proton and the neutron are some **figures of rotation**. Which is quite possible to calculate. And calculate the lines of force between protons, neutrons. Probability Condensation Points. And based on this, calculate the magnitude of the nuclear forces inside the atom. Also with the help of pure geometry.

And this exact calculation of intranuclear interactions will be of great help in solving the most important problem of our time. Creation of controlled thermonuclear fusion. Getting energy from hydrogen.

I really don't want to think about the opportunity presented by more precise calculations to create more accurate and destructive weapons.

Let us now consider the situation when an electromagnetic wave with a high frequency, hard electromagnetic radiation, falls on an electron. Let's say we have a hydrogen atom. And an electron in this atom. Let the frequency of this electron be 1.25 10^{20} occurrences per second. And the frequency of the electromagnetic wave will be $1.4 \cdot 10^{20}$ Hertz, occurrences of certainty per second. The photon approaches the electron. And before certainty appears both in the electron and in the electromagnetic wave, the spheres of probability of these particles intersect. The standard probability of the sphere of probability of an electron at the moment of occurrence of certainty will be a specific value. The frequency of the photon is higher than the frequency of the electron. This means that the standard probability on the electromagnetic wave probability sphere is higher than the standard probability on the electron probability sphere. And when the sphere of probability of a photon approaches the sphere of probability of an electron, they claim the same region of space. So that certainty appears there either in the sphere of probability of a photon, or in the sphere of probability of an electron. Since the standard probability of a photon is higher, then certainty will appear precisely in the sphere of the probability of a photon. That is, the photon will occupy this controversial space. But certainty must also appear in the sphere of probability of the electron. And certainty will appear in the direction from its former location. That is, the electron will also fly out of this place, from the hydrogen atom. It turns out that an electromagnetic wave with a high frequency will knock out an electron from a hydrogen atom.

All this shows that when particles interact, what is decisive is not what kind of particle it is - a photon, electron, proton, neutron. And **current** energy of the particle, its frequency. And the frequency in all particles is the same process - the frequency of the appearance of certainty in the particle. And the value of the probability in the probability sphere of the particle depends on the value of the frequency. According to the formula $P = Kv^2$. The greater the probability, the stronger the particle, the more likely certainty will appear in the probability sphere of the particle. And it will have a stronger effect on other particles. Move them away from your path.

So, an electromagnetic wave with a high frequency greatly changes its properties. And behaves much like a particle with mass. Knocks out other particles from their places. such as electron.

Methods used in the theory of certainty.

Now it is worth saying what methods the theory of certainty uses to formulate its provisions. There are only 2

1) Rectilinear logic. Somewhat stupid logic. If yes, then yes. If not, then no. No ambiguous interpretations. Just looking at a situation. And if the most logical solution is the following, then fix this solution. And we stand firm. Let this logical decision in some way be contrary to the apparent evidence. We prioritize logic. Not visibility. Let this logical decision contradict what is now known. And it is unusual and new. If this decision is logically consistent, we consider it correct. And based on that, we move on. And we are looking for a new most logical solution to a new question. And often this logical solution is very simple. And lies on the surface. But it is somewhat unusual. Contradicts some common practice. Which is mistaken for the truth. And this logical decision is often disguised by ordinary clothes. Which often have opposite properties. Camouflage. And if you dig a little deeper, then straight-line logic will show cause-and-effect relationships. And the true state of things.

2) The second foundation of the theory of certainty is pure geometry. And in the original, Euclidean version. There is no escaping logic here. Euclidean geometry is an unambiguous science. And what is obtained as a result of geometric interactions is recognized as true.

Solution of the problem of wave-particle duality in the theory of certainty.

Consider wave-particle duality. In any elementary particle: both an electromagnetic wave and a particle with a mass, corpuscular properties are proved to be present. No wonder they are called particles. And the wave properties are confirmed both experimentally and theoretically. But, obviously, something cannot be both a particle and a wave at the same time. Physics has so far simply fixed the presence of corpuscular-wave dualism. And the impossibility of explaining it logically, finding some physical objects to explain it.

We include straight-line logic. And we agree that there is no such object that could be both a particle and a wave. The only logical solution would be that each particle consists of **two objects**. One carries the functions of a particle. The other is the properties of the wave. And these objects complement each other.

Indeed, certainty is the ultimate embodiment of the properties of the particle. She is separated from the outside world. And very defined in space and time. The main property of a particle is discreteness. And certainty is a portion, a quantum. First of all, the quantum of time. But also a quantum of space.

The sphere of probability is the embodiment of wave properties. She is continuous. And flowing like a wave of the sea. And since it has a probabilistic nature, the spheres of probability interact well with each other. They pass their probability to each other - their main property. This continuity, variability, and superimposition of waves on top of each other, a clear property of a wave, is fully present in the realm of probability. Moreover, the properties of the sphere of probability give the wave properties of each physical object and phenomenon. Just as the corpuscular properties of certainty appear in every particle and every object.

And the solution of the problem of wave-particle duality is a fundamental task of physics. About the properties of light - whether it is a particle or a wave, they argued from the very beginning of modern physics. Such geniuses of science as Newton and Huygens. And from that time, the understanding began that having unraveled the nature of light, having logically consistently solved the corpuscular-wave dualism of light, one can approach the solution of the most fundamental foundations of the structure of nature.

And having imagined light as a successive appearance of certainty on the spheres of probability of light, one can immediately move forward. And transfer this solution to other elementary particles. And draw further logical conclusions.

And an example of such straightforward logic would be that in order for the world to change, develop, interact, the only solution would be that everything exists sequentially in time. And if we have chosen a sequence of two possible options, then the second option - the simultaneity of existence - we resolutely reject. Even if it seems obvious to us. And if everything exists **sequentially** in time, then this law must have a **material carrier**. Some smallest portion of time that consistently exists.

This is the only logical solution. From this logical decision, certainty and its properties emerge. And properties of certainty require that at the next occurrence in the area of the previous occurrence, the certainty would be **at a distance** from the place of the previous appearance. The logical decision was to set a condition so that in the next cycle the certainty would appear at the same distance from the point of its previous appearance. And a figure that has the same distance in space from one point is a sphere. Thus, the sphere of probability was born. It was also necessary that the radius of the sphere depended on the period of time between occurrences of certainty. So there was a requirement for the probability sphere to expand at the speed of light.

The uncertainty principle is an indicator of time intervals when a particle does not exist.

Now consider the uncertainty principle. It says that for each particle, given the appropriate periods of time, small periods of time, it is impossible to accurately determine the properties of the particle. Its location, momentum.

We turn on our straightforward logic. If something exists somewhere, it means that you can always find it there. And we have a situation where for each particle there is a period of time when it is impossible to accurately determine the properties of this particle. In fact, it is impossible to determine if a particle exists or not. The so-called Schrödinger's cat. It is both there and not at the same time.

The only logical solution would be that if at some time it is not possible to determine the exact properties of a particle, then at that time the particle simply **does not exist**. Yes, this is contrary to the obvious practice that all objects around us exist continuously in time.

But we found out that certainty appears in an electron after a period of time of $8 \cdot 10^{-21}$ seconds. And we can safely say that in this period of time $8 \cdot 10^{-21}$ seconds, the electron simply **does not exist**.

Experimental physicists have come to the same conclusions. Only they did not dare to draw such radical conclusions. Compton, at the beginning of the last century, did experiments on the scattering of photons on electrons. And he experimentally calculated the Compton wavelength of an electron: $\lambda = h/mc$. For us, this is the radius of the sphere of probability of the electron at the moment of the appearance of certainty. And it is equal to the distance R between adjacent occurrences of certainty in the electron. And it is calculated by the same formula $R = h/mc$.

The Compton wavelength λ for an electron of mass m determines the rotation period of the probability amplitude. And its square is the probability that the particle will move from one point in space-time to another. This period of rotation of the probability amplitude T is calculated by the formula T = λ/c.

This is our time period T between successive occurrences of certainty in the electron. T = R/c.

Only Compton assumed that it was an electron moving from one point in space to another. We found out that these points, when the electron exists, are the places where certainty appears. And the rotation period of the probability amplitude is simply the time between successive occurrences of certainty in an electron. And at this time, the electron simply does not exist. Specifically, every $8 \cdot 10^{-21}$ second, an electron does not exist.

Why are Compton and other physicists sure that according to these formulas they observe the movement of **an electron?** Because at these points the object has the properties of an electron: charge, momentum, mass.

Why are we sure that the calculated points are the places where **certainty**? Because both charge and mass are a consequence of the intersection of the spheres of probability of an electron with the spheres of probability of other particles. And it is the expanding sphere of probability from the point of origin of certainty that so affects the spheres of probability of particles, which we use as tools for observing the electron, that gives information as if there was an electron in this place. This sphere of probability gives such changes in the probability, registered by the device particles, as give the properties of the electron. Its charge and mass.

The same is the case with other elementary particles. The Compton wavelength of a neutron is $1.32 \cdot 10^{-15}$ meters. This is the distance between adjacent occurrences of certainty in the neutron. And every $4.35 \cdot 10^{-24}$ seconds, a neutron simply does not exist. When through the cycle, this period of time, certainty will again appear in the neutron.

Let's free the cat from Schrödinger! Solving the problem of multiple worlds.

As soon as physicists began to study elementary particles, they faced the world of probabilities. The particles did not move along a continuous path, but according to the laws of probability. There is a simple probability distribution for the appearance of an electron in space. According to the Schrödinger wave formula. And that's all there is in terms of particle motion. Plus, for short periods of time it is impossible to determine exactly the location and momentum of the particle. The principle of uncertainty. There can be two solutions to this problem. So far, physics has settled on one of them. It has multiple worlds. And a particle can exist in one world, and not exist in another world. And all these worlds exist in parallel and simultaneously.

And so the famous Schrodinger's cat appeared. Which exists in one world. And in the other - no. And this cat simultaneously exists in these two worlds. Physicists went to all these tricks for the sole purpose of preserving the continuity of the existence of particles. And the fact that the whole world exists simultaneously and in parallel. Because when it turned out that the world exists according to the laws of probability, **one world** combine all this **impossible to**. The fact that these laws of probability operate, and the fact that this one world exists continuously, and everything exists simultaneously, in parallel. And physics introduced parallel worlds. parallel possibilities. Parallel Schrödinger's cats appeared.

But I don't think Schrödinger's cat likes it when you don't know if he exists or not. I don't even think this cat likes it when you don't know if cat food exists in his bowl.

Figure 28. The cat solves the problem of multiple worlds.

It follows from this that something is not right here.

There is a second option, how to introduce the laws of probability into objective reality. Recognize that everything exists **sequentially**. Yes, then one would have to admit that in each particle there are periods of time when it **does not exist**. And all the objects around us **do not exist permanently**. There are moments in time when they exist - when certainty appears in them. And most of the time, these objects don't exist.

Yes, at first this statement contradicts our evident experience. But if you take a closer look, and reduce the period of time, it turns out that simultaneous events are simply no. And our idea of **permanent** existence is redundant.

It is necessary and sufficient that there be a periodic process. In which there were moments of unambiguous existence - complete certainty in space and time. In between these moments **, nothing really happens**. And so there are not only possible, but necessary empty intervals of time. It's just that these periods of time when nothing happens are very small. For an electron, this is $8 \cdot 10^{-21}$ seconds. For a proton - 4.35 10^{-24} seconds. The greater the mass of the object, the shorter the time intervals between appearances of certainty in the object. Less time intervals when the object does not exist. Time is determined by the formula $T = h/mc^2$, where m is the mass of the object.

So in a person weighing 80 kilograms, certainty per second appears 1.088 10^{52} times. And the period of time between appearances of certainty in this person is $9.191 \cdot 10^{-53}$ seconds. Not so much to have the feeling that you exist all the time. Without these microscopic gaps when nothing happens.

And the value of the frequency of occurrences of certainty in a person is obtained by summing up the number of occurrences of certainty per second in each electron, proton, neutron of this person. And since the time of $9.191 \cdot 10^{-53}$ seconds is fantastically short, this sequence of occurrences of certainty in a person, successive moments of existence create in a person a feeling of the continuity of his existence. And a sense of the continuity of the existence of surrounding objects.

In addition, a person has his own pride. He can rightly say, “Yes, there are moments in time when I don't exist. But 10^{52} times per second in the whole world, only I exist. Even so, 10^{52} times per second, God exists in me”.

Let's look at processes that last a short period of time. In a cathode ray tube, it is theoretically possible to direct a separate electron beam to each pixel of the screen. And then this point of the screen will glow - to exist **continuously**. First, this approach is clearly **redundant**. One electron beam does everything just fine. Irradiates all pixels of the screen one by one. And each pixel is exposed to only one small moment of time. And then, for a relatively long period of time, **nothing happens**. The pixel simply **maintains** the luminosity set by the beam.

Secondly, if a separate beam of electrons were directed at each pixel, no one would like the result. The same picture would constantly hang on the screen.

Constancy and immutability - this is the price of the simultaneity and parallelism of the world. Here the direct perception of the world clearly shows us the dynamics, the change in our world. And a logical step would be to lean towards the variant of the consistent existence of the world. That in all objects there are periodic moments of time when this object exists, which means that the object is **changing**. He moves to another point in space. Absorbs or releases energy. And there are periods of time when nothing happens. There are no changes - but there is simply maintenance of the previous state. The important thing is that when there are no changes, then nothing at all is needed for this state, no material objects, no energy. Even the very existence, time, is not needed.

One of the smallest time periods is in computers. Since modern computers have a very high clock frequency. And the time between cycles is short. Also, modern computers are multi-core - with two, four or more cores. It is claimed that this ensures the parallel operation of the processor. Each core solves its own task, and the cores work in parallel. But specialists know the fact that if you reduce the time to the size of the clock period, then there is no parallel operation. In each such period of time, **only one** processor core is working. The next moment in time is different. And on an enlarged period of time - it seems like the parallel operation of the processor cores.

To put it bluntly, when the time period decreases, there is not a single parallel process. Everywhere, all parts of the process occur **sequentially**. Which is natural. Without successive processes, there would be no flow of time itself. And the development of the world.

In general, in the statement that each object does not exist permanently, there is no contradiction either with logic or with the real world. There are times when an object exists. And periods of time when nothing happens. And every person feels great about it. And the cat is doing great. And the fact that there are periods of time that he does not exist does not prevent him from enjoying life at all. That is, such a solution to the issue of interweaving the probabilistic laws of quantum mechanics of elementary particles is both logical and does not contradict reality.

I will say frankly that the price paid by physics for the continuity and simultaneity of the world is too high. Moreover, this continuity and simultaneity **is not inherent in** our real world. It was just a false target. And the price for this was multiple worlds. When both people and other objects are simultaneously in several worlds. And they live different lives. This is clearly a dead end. And most importantly - nothing from the real world is not confirmed. In addition to mathematical formulas that enable such parallel worlds. But not all mathematical formulas reflect reality, some give only mathematical illusions. And this happened more than once. So we can say that if physics moves along the wrong path of a simultaneous and parallel world, then it will give rise to unnecessary unreal entities, according to Occam's razor. An example of this is string theory, where the number of dimensions of space is simply beyond logic and reality. Or along the path of self-deception - to introduce pairs of virtual particles into the theory. They are virtual, they do not appear in reality, so you can endow them with unreal properties. They will violate the law of conservation of energy, and take energy from nowhere. Of course, this is better than admitting that the direction is wrong. But no matter how much the car accelerates at a dead end, does not drift, you can continue moving only if there is a road, logically consistent landmarks.

So the cat can relax. Schrödinger no longer has power over him. We brought him back from parallel universes to our reality. Yes, it turns out that permanent existence is an unnecessary luxury. But cyclic existence is very suitable for him. After all, this is how all objects in the universe exist. And for billions of years. We will not demand the impossible - permanent existence. Reality is amazingly good.

Criticism of the theory of certainty.

Let's take a critical look at the theory of certainty. What may be questions and discrepancy with reality. In the theory of certainty, only two elements are involved - certainty and the sphere of probability. Let's start with certainty. What is its unusualness? Questions evoke such properties of certainty. Short lifetime. Not comparable to what has happened before. Small sizes. The property of certainty to instantly move in space. For a very short time. And over great distances. In the world known to us, all bodies have inertia; they cannot instantly mix. And there is even a law about the maximum speed - the speed of light. Also, any physical phenomena are displayed by our sense organs, or devices - their continuation. Even elementary particles - electrons, protons are clearly visible in the cloud chamber. Rutherford recorded alpha particles on a screen phosphor. Therefore, there are no particular doubts about the reality of these particles. How can we see certainty?

All the objects around us have properties familiar to us. They are different, separated from each other, have obvious dimensions. These objects exist constantly, continuously and in parallel, all together. Certainty has many opposite properties. It is one - that is, the same particle appears in all objects, but as a result, all objects are different. Certainty is discrete - in each object it always exists for the same portion of time. And what is very difficult to accept: everything in the world — a person, a car, a house, a tree, the Sun, grass — exists sequentially. Like in a kaleidoscope. And how to believe that a particle with such properties is the basis of the world?

Let's start with properties of certainty. Let's rethink what we're dealing with. With the smallest brick of the Universe. There is nothing less. And this is progress. Some theories suggest the absence of a smallest time dimension. Continuity of time. But in this case, the Universe simply cannot exist, it will become illogical, and natural phenomena cannot be explained. As the ancient Greek thinkers rightly noted, in the absence of the smallest indivisible period of time, Achilles can never outrun the tortoise.

It is important that the size of the portion of time is **finite**, limited. And it is on this size of the quantum of time that the time of elementary particles, and large bodies, consisting of definiteness, depends. That is, certainty is a **standard**, all other objects are compared with it. And not vice versa. The dimensions of the certainty do not depend on the sizes of macroobjects. And these objects depend on the properties of certainty. Therefore, the duration of the time quantum can be arbitrarily small. The main thing is that it is finite. It is important that real natural phenomena, the time of physical processes do not contradict the value of the quantum of time. So that the duration of the time period is consistent with the real world.

Now consider the property of certainty to instantly move to **any point in the Universe**. In the example with billiard balls, we have already considered the properties of probabilistic processes. What is the main thing in them is the sequence of the same type of events, and time. And distance doesn't matter. The appearance of certainty is a pure probabilistic event. Therefore, certainty appears in the place where the law of probability shows. Where the standard probability of the probability sphere of a given particle becomes equal to the probability at the point of the previous occurrence of certainty. And distance doesn't matter.

In addition, the main obstacle to the instantaneous movement of an object is its **inertia**. Which resists changing the position of an object.

But the phenomena of inertia are wholly and completely conditioned by the spheres of probability. their intersection. And every elementary particle, every object is a product of the intersection of probability spheres. Which determine the trajectory of the appearance of certainty in the particle; and the speed and direction of the particle. Certainty is a completely separate entity from the realm of probability. And therefore, those properties of particles that exist in them from the sphere of probability are definitely **absent**. Including certainty does not have such a property as inertia. And nothing prevents the instantaneous movement of certainty in the universe.

In addition, we noted earlier that certainty is the basis of all other objects and phenomena of the world. Therefore, the properties of certainty can be any. The main thing is that the consequences of the properties of certainty be combined with the phenomena of nature. And since the instantaneous movement of certainty in the Universe is necessary for the existence of objects in the real world, then this is how it should be.

It is important to say that I did not want to overload the reader with information. Therefore, I divided the information about the theory of certainty, and logical conclusions, consequences from it into parts. One fantastically important conclusion follows from the already announced information of the theory of certainty. I will tell about it in the second part. And this conclusion absolutely unambiguously explains how certainty instantly moves in space. So for skeptics, this will be a real argument.

And this second part of the theory of certainty will soon be brought to your attention.

But with the ability to observe certainty, an interesting situation turns out. To see something, you need 2 actors. Observer and object of observation. Fundamentally, certainty is always found in only one point. Other points are not certain. But certainty is also a moment of being. When certainty, existence is at one point, nothing exists at other points. So when the certainty is somewhere, the observer simply doesn't exist. It is fundamentally impossible to see certainty. Do not rush to exclaim: "He himself confessed. That certainty cannot be seen. It's all in the realm of fiction."

Certainty and the sphere of probability are paired. And if their properties, and the laws established by them, correspond to the phenomena of the real world. Both experimentally and theoretically. Then there is nothing left but to recognize the existence of both certainty and the sphere of probability for a person who appreciates logic.

Now let's return to the difference between the obvious feeling of the surrounding world, and the picture that the theory of certainty paints. Where all material objects consist of intersections of virtual spheres of probability, and the periodic appearance of certainty. We know that the appearance of certainty is entirely determined by the spheres of probability. Their intersection, and the probability value at the intersection points. There would be a sphere of probability, and certainty would appear. Such a motto can be invented for the theory of certainty. And, more than certainty, the spheres of probability are important to us. To what extent the intersection of the spheres of probability is well combined with the phenomena of the real world. In other words, to what extent the 3D models that we built during the interaction of probability spheres emanating from different particles correspond to the real forces of nature - electromagnetic, gravitational, nuclear and weak interactions. And if there is a coincidence, then this is the main thing. And we should not be surprised, but rejoice. That it was possible to find such objects, unlike what we see in the everyday world. But which really exist, just a little deeper than the objects around us. And they appear only at very high magnification, very high zoom. That certainty manifests itself when the usual time slows down by 10 times to a very large extent. And we were able to find it.

Dimensions of certainty.

Now it is necessary to realistically estimate the value of the portion of time t_0. And the size of the ball of certainty is the diameter d_0. One of the guidelines for determining the value of the quantum of time is the value of the Planck time.

Its value is $5.39\ 10^{-44}$ seconds. Also a very small amount. And it is necessary to investigate the relation between the Planck time and the magnitude of the time quantum.

The second direction of calculations should be guided by the values of physical constants: h - Planck, G - gravity, ε_0 - electric. Naturally, the values of the electric and gravitational constants depend on the angle α_0, the angle between two groups of both electrons and protons. But, perhaps, the size of the portion of time also contributes to their existence. As for Planck's constant, it seems that the value of this constant directly affects the value of the time quantum, measures portions of time. You just need to establish the exact ratio.

It would be quite logical to assume that the total frequency of Absolute Time depends on the cube of Planck's constant:

$\nu_0 = 1/h^3$. Then the total energy of the Universe will be equal to $E = h\nu_0 = h/h^3 = 1/h^2$. The value of the time quantum is $t_0 = 1/\nu_0 = h^3 = 2.9\ 10^{-100}$ seconds.

The third direction proceeds from the fact that the total energy of the Universe is completely identical to the Absolute time. If we knew the total energy of the Universe, then it would be a matter of one arithmetic operation to accurately determine the value of the quantum of time: $\nu_0 = E/h$, where E is the total energy of the Universe. This is how we find out the full frequency of the Absolute Time ν_0. And from it we learn the value of the time quantum: $t_0 = 1/\nu_0$.

But, most likely, it will be necessary to do the opposite. In some other way, we will determine the value of the time quantum. And from it we calculate the total energy of the Universe. With a time quantum value of $2.9\ 10^{-100}$ seconds, the total energy of the Universe is $2.28\ 10^{66}$ Joules.

What is the total mass of the universe?

Given the value of the time quantum, we will also calculate the total mass of the universe. According to the formula $m = E/c^2$, where E is the total energy of the Universe. If the value of the time quantum is $2.9\ 10^{-100}$ seconds, then the total mass of the Universe is $2.53\ 10^{49}$ kilograms. With the mass of our Sun being $1.99 \cdot 10^{30}$ kilograms, the mass of the Universe is equal to $1.27 \cdot 10^{19}$ of the mass of the Sun. There are so many stars, such as our luminary, in the Universe. But since the mass of the stars is different, and the energy of the Universe consists of not only the masses of stars, the number of stars is slightly different. But it will be possible to understand the direction.

And if we measure **exact** value of the time quantum, then the values of the mass and energy of the Universe will not be approximate, but very accurate. Otherwise, some critics may say that there is nothing new in this theory of certainty. There is a retelling of known phenomena and formulas a little differently. But one calculation of the total energy of the Universe can be the result for which you can build telescopes and launch them into space orbit.

If we know the size of the time quantum, then determining the size of the ball of certainty, the diameter d_0, becomes a simple task. From the definition of what a quantum of time is, it follows that at each moment of time certainty is **only in one** specific place. This means that the places of two successive occurrences of certainty **should not intersect**. Otherwise, it will turn out that at **two** different points in time certainty is **in the same** place. So let's take the last option. At which: 1) certainty appeared at point A and stayed there for a portion of time t_0. 2) In the next portion of time t_0, the sphere of probability emanating from point A expanded to the size of the radius $R = cT = ct_0$. Since a period of time has passed, equal to the quantum of time t_0. 3) And certainty appears on this sphere of probability. That is, **minimum** time of existence of the sphere of probability is taken before the appearance of certainty in it. The minimum time equal to the value of the time slice t_0.

Now, based on the properties of certainty, we need to ensure that the certainty that occurs in this sphere of probability **does not intersect** with the point in space where the certainty was the previous time. That is, the ball of certainty that appears in the sphere of probability should not intersect with the ball that was at point A. There is also an analogy with billiard balls pressed together. Make sure they don't overlap. The only solution is that the size of the ball of certainty, its diameter d_0, be less than the distance $R = ct_0$. A little, but less. Then our two balls of certainty **will not intersect**. Hence, we determine the size of the sphere-definiteness. The diameter d_0 of the ball of certainty must be less than the distance that the probability sphere travels in time t_0. The sphere of probability expands at the speed of light:

$d_0 < ct_0$. And this fully gives us knowledge about the size of the diameter of the sphere-definiteness. If the value of the time quantum t_0 is equal to 2.9 10^{-100} seconds, then the size of the certainty - d_0 must be less than 8.7 10^{-92} meters.

Huygens waves as a manifestation of probability spheres.

Now let's discuss the sphere of probability. Just in the properties of the spheres of probability there is nothing incredible. And it is difficult to find objections about the impossibility of their existence. Moreover, with their description, modern physics began. In the 17th century. At the heart of modern ideas about waves are the views of the brilliant Dutchman - Huygens, about the nature of waves. He described the nature of the origin and propagation of sea and other waves as a consistent perturbation of points of matter by spherical waves. And these points, in turn, emit spherical waves.

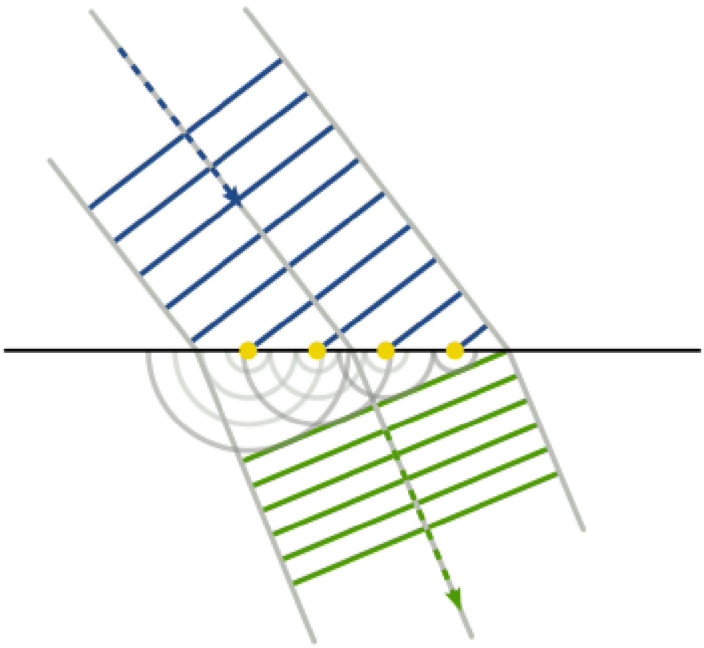

Figure 29. Wave refraction according to Huygens: blue lines and blue arrow show the fronts of the incident wave and the direction of the phase velocity vector in the first medium; yellow dots and gray semicircles are secondary sources at the interface between two media and the fronts of spherical waves generated by them in the second medium; green lines and a green arrow are the fronts of the refracted wave and the direction of the phase velocity vector in the second medium

. The figure shows that each point of the front (surface reached by the wave) is a secondary (that is, new) source of spherical waves. The envelope of the wave fronts of all secondary sources becomes the wave front at the next moment of time.

For light waves, this principle is formulated as follows. Each element of the wave front can be considered as the center of a secondary perturbation that generates secondary spherical waves, and the resulting light field at each point in space will be determined by the interference of these waves.

As they say, find 10 differences from probability spheres. Obviously, these processes of interaction of spherical waves are based on the interaction of spheres of probability. It's just that these spherical waves slightly enlarge and change the initial picture of the interaction of probability spheres. But only a little. And all the basic properties of the spheres of probability, and the properties of interaction, the intersection of the spheres of probability manifest themselves in these spherical waves. And looking at these spherical waves, it is easy to believe in the reality of spheres of probability.

Another good way to test the truth of any theory is the method of **contradiction**. That is, according to the basic postulates of the theory of certainty, we will make opposite statements.

Statement 1. Time is always continuous for all objects. And it has no gaps. Then time would always be constant. And its value would never change. What contradicts the observation of objects moving at a speed comparable to the speed of light. And with the special theory of relativity.

Statement 2. Time does not exist consistently in all objects of the world. Time exists everywhere simultaneously and in parallel. Then there is no consistent flow of time. The main thing that is inherent in time. "Everything flows, everything changes." And there will be no movement. Everything freezes in place, like in an instant photograph. Etc.

Prince of Denmark and the unity of the world.

The next topic that needs to be touched upon is the unity of the world. Not even a unified theory of all interactions, but a fundamental question about the unity of the world. Applying the method of contradiction, we will make the assumption that there is no unity of the world. But it turns out that there is no basis for the interaction of various elements of the world. And then the world would not interact. Didn't move, didn't develop. We immediately reject such a discrepancy with reality. And so, it can be firmly asserted that the world is one. This means that for **all** parts of this world there is something in common, there is a common basis, the same for all, so different, objects of the Universe. There is such a basis. And that is existence. Everything that exists in this world undoubtedly exists. The advances in physics were due to one strong approach to solving problems. If some phenomenon is material, it exists, then there is a material object of this phenomenon. Quantization of natural phenomena, finding the smallest material carriers of these phenomena, led to a grandiose breakthrough in physics.

But here another effect began to appear. In the world of elementary particles, the microworld, the laws of probability rule. Moreover, the same formulas, the same laws of probability for absolutely different particles. And this hints very strongly that the probability appeared because there is **one** simple, basic probabilistic process. Like tossing a coin - 2 options. Where there is only a purely probabilistic process. And there is a level higher, harder. Where there are also probabilistic processes. But the elements that participate in this are more complex, have more event options, these elements have more properties.

And at the next level of complexity, events become even more complicated, and their number increases to large values. And the law of large numbers transforms these probabilistic-based processes into deterministic, continuous processes. Such as they are described by classical mechanics, and as we observe them in the surrounding world.

It is clear that in such a structure the most important element is the basic element of the lowest level. After all, its properties, passing through this entire structure, determine the properties of the objects of the surrounding world.

It is important to understand what may be at the basis of this elementary probabilistic process. The most logical assumption would be that it is existence itself. Does it exist or not. Yes or no. 1 or 0, as in computer programs. And certainty ideally fits the role of this elementary probabilistic process. The appearance of certainty, or an empty period of time. existence or not.

And if we understand how nature encodes its computer program. How it forms its zeros and ones. It is safe to learn how to use it. Knowing the programming language, you can learn how to write **your own** programs. And put them to work.

And if the basis of all objects and phenomena is the appearance of **one** object - certainty, then here is the unity of the world in its purest form.

An important issue is also how the Universe maintains itself in an equilibrium, stable state. After all, such different forces and different objects act in it. Both huge and very small. And all this acts like a well-coordinated orchestra playing. Certainty and the scope of probability can answer this.

What is the sphere of probability of any particle at the moment of occurrence of certainty? On this sphere of probability, the spheres of probability of a huge number of particles intersect. And many particles are **light-years** away from this sphere of probability. And expanded at the speed of light for several years. And, nevertheless, they are present on this sphere of probability, intersect with it, and contribute to the probability distribution at points on the surface of this sphere. We can say that this sphere of probability is a snapshot of **the entire universe**. The probability distribution on this probability sphere is the product of the interaction of the entire universe. And the fact that there are points with different probabilities on this sphere of probability shows about the struggle of different forces, interaction, tension in the Universe. And as the sphere of probability expands, this tension increases. And at the right moment, certainty appears. And instead of different possibilities, different potentials, and the struggle between them comes **the only solution**. That is, by its appearance, certainty resolves tension, the difference in probabilities formed in the sphere of probability from all ends of the Universe. The process of appearance of certainty in the sphere of probability is the process **of harmonization of the Universe**. Everything comes to one decision - certainty to be. Each time certainty acts as Hamlet, and solves this question in the only correct way.

Big bets - bet on speed. In what areas of life is a revolution inevitable?

It would be interesting to predict how quickly this theory will become widespread. It will go through the stages of acceptance of new information. From "this cannot be" to "it was all known to everyone a long time ago." As everyone knows, people are divided into 5 groups according to the criterion of propensity to accept new information. As can be expected, the speed of dissemination of new information will depend on:

1) The usefulness of the information, the potential positive effect of using this information to get interested in innovators - people from the first group. About 2.5% of the population.

2) To what extent this information will be simple and clear, accessible for understanding. So that people from other groups can perceive it.

Innovators are often members of the elite. And they, like sharks, plow the ocean of information in order to be the first to taste something new. Because they know the main rule of life: "Whoever sat down first, he ate." For them, unusualness and novelty is not a frightening factor, but, on the contrary, an attractive one. Because novelty, by definition, gives exclusivity, individuality, the opportunity to **stake out** a piece of land for the first time, to remove foam from new opportunities. As we have already said, the main discoveries in science were those that asserted the priority of reason, logic over evidence, over feelings. Although the percentage of people who consider the Earth flat and deny the existence of atoms is still quite large. And at first, this crucial information seemed strange. And it was accepted only by innovators. But it was they who received all the laurels: the authorship of new discoveries that develop revolutionary theory; putting these ideas into practice - new products, methods of production, profits from economic activity. It is clear that a breakthrough in science is like overcoming a mountain pass - behind it there is always a fertile valley. And those who can overcome this pass in the forefront will be able to stake out these lands for themselves. And then harvest from, perhaps hitherto unseen, fruit trees.

And, if, as a result of research, it is possible to discover the most fundamental laws of nature, then the most fantastic opportunities are provided. We have already spoken about some of the directions where the application of the theory of certainty arises.

It is important that she arrived on time. When there is a possibility of computer calculations.

By its geometric basis, this theory can be very simply transferred to the algorithms of computer programs, and greatly simplify calculations in actual theoretical and practical problems. And this simplification of calculations, their multiple acceleration will lead to the transition of quantity into quality. Those tasks will be solved, to which it is not yet known how to approach. So it will be possible to accurately calculate the interaction of electrons in the outer shells of atoms. And theoretically learn their exact physical and chemical properties. This will certainly lead to a breakthrough in such an important topic as superconductivity. It is possible to theoretically model the properties of new molecular compounds and create technologies for their production. New materials, new products, new opportunities.

A new approach to the essence of nuclear forces will enable a volumetric calculation of the behavior of protons and neutrons in the nucleus. That will certainly bring closer the solution of the strategic problem - controlled thermonuclear fusion. What will give a revolution in energy, and will affect all spheres of our life.

And the simplification of computer computing algorithms will affect the computer technology itself. I mean quantum computers. Our picture of the world makes it possible to greatly expand the horizons of studying quantum phenomena. What will give a qualitative leap in the development of quantum computers. Which will certainly affect the pace of development of artificial intelligence.

And for the first time, our picture of the world is such a theory, the main provisions of which can be verified experimentally for the truth within **one day**. With the help of 3D modeling, one can verify the correspondence of the pattern of interaction of various elementary particles, as objects emitting spheres of probability. With existing knowledge about the fields arising from the four fundamental interactions.

Thousands of consequences follow from any fundamental theory. Many of which are very important and have a great impact on both science and everyday life. As it was at a turning point in the formation of quantum physics. What can I say, even if such geniuses as Einstein did not accept the new information. But innovators in science, mostly young physicists, embraced new approaches. And in a few years this theory has become a mighty tree with many branches - theoretical consequences. And also after a short time began to bear fruit - new goods and services. The things that define our modern civilization are computers, rockets, mobile phones, nuclear power plants. And the scientists who participated in the development of quantum physics forever inscribed their names in science.

That the theory of certainty is so simple and so suitable for computing gives it a very important quality in today's world. Its use will give very **fast results**. Both in theory and in practical use. Therefore, innovators, as always, will collect the main profit.

As we have already said, the main methods in creating the theory of certainty were: rectilinear logic and pure geometry. The consequence of this was the simplicity and clarity of this theory. It does not contain complex formulas and complex logical constructions. And modern 3D modeling makes it possible to illustrate the provisions of the theory as clearly and clearly as possible. Therefore, almost anyone can perceive it. And as a subject of school and university education, certainty theory can become one of the easiest subjects. Thanks to the opportunity to create and demonstrate to students computer models that illustrate the provisions of this theory.

In general, I'm willing to bet that within a year this theory will gain significant circulation.

A warning about the dark side of knowledge is needed here. Question - How to make a new powerful weapon? The answer is to get more knowledge about the structure of the world. Historically, the more a person learned the laws of the world, the more powerful and perfect weapons he created. From the use of the potential energy of a bent tree - a bow; the discovery of gunpowder and the use of firearms, to the use of nuclear energy. The Manhattan Project showed how quickly a fundamentally new and powerful weapon can be created. From Hahn and Strassmann's discovery of uranium fission in 1938 to the atomic bomb in 1945. New knowledge can also be used to create weapons that are not so powerful, but more selective and stealthy. Like what causes Havana syndrome.

I hope that new knowledge will make a weapon that will be in smart hands. In the hands of not a destroyer, but a defender.

The information presented here provides a very powerful computational tool. Which can be used to create new weapons. And the situation can develop even more rapidly than in the forties of the twentieth century.

Secrets from the second basket.

In order not to overload with information, not all the consequences and provisions of the theory of certainty are presented in one text. The second part will be published soon. And that's what will be in it.

3D models of all four fundamental interactions. More complete information about weak interactions. And many logical consequences follow from this theory. And there is one of them, which is almost equal in importance to the theory of certainty itself. Allowing you to more fully understand the essence of certainty, and the properties of the real world it creates. And this consequence allows us to answer the questions: “Where are the edges of the Universe? Where does it expand?” And it turns out, in a sense, that the Universe before the Big Bang, during the Big Bang, and now has the same properties. New properties of the nature of space are clarified. And there are new theoretical approaches to moving in this space. How do you like that, Elon M.?

And from this great consequence of the theory come the possibilities of changing the proper time of objects. What we said at the beginning - how can you increase your own time? It is clear that in the light of new information, the question needs to be reformulated - how can you increase the frequency of occurrence of certainty? For example in your case. How can you increase the number of servings of being in yourself? How can you increase your time? We have learned the fundamental laws of time. So we can have the courage to ask such bold questions. And get real answers.