Journal of American Science

Websites:
http://www.jofamericanscience.org
http://www.sciencepub.net

Emails:
editor@sciencepub.net
sciencepub@gmail.com

MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

A New Explanation of the Mechanism of Korean room temperature and ambientpressure superconducting materials
---- Biological superconducting mechanism links the first room temperature and ambient pressure superconductivity

Dekui Wang[1] , Binggong Chang[2]

1. Mianyang Daily, Sichuan, China
2. SUNY Downstate Medical Center

Abstract: A team of Korean researchers say they have discovered the world's first room-temperature superc onductivity, a mechanism of room-temperature Tc discussed in terms of the one-dimensional BR-BCS theor y. What is the most basic principle of "superconductivity" here? The famous "BCS theory" is a theory of the basic principle of "superconductivity", but it is based on the principle of electron pair theory (BCS is t he pair of electrons with spin reversed parallel pairing), is there a more basic principle that includes it?

[Dekui Wang , Binggong Chang. **A New Explanation of the Mechanism of Korean room temperature and ambientpressure superconducting materials---- Biological superconducting mechanism links the first room temperature and ambient pressure superconductivity.** *Am Sci* 2023;19(9):36-56]. ISSN 1545-1003 (print); ISSN 2375-7264 (online). http://www.jofamericanscience.org 05.doi: 10.7537/marsjas190923.05.

Keywords: superconductors, room temperature ambient pressure, electron pairs, BCS theory, hexagonal structure

[0, Introduction]

On July 31, 2023, Professor Sinéad Griffin, a researcher in nanostructured materials theory at the Lawrence Berkeley National Laboratory (LBNL), one of the top laboratories in the United States, published an article stating that calculations using density-functional theory (DFT) and the GGA+U method could provide a theoretical basis for the South Korean team's so-called "room-temperature normal-pressure superconducting materials" of July 22, giving new direction to the study of superconducting materials. "room-temperature ambient pressure superconducting materials", providing a new direction and inspiration for the research of superconducting materials. Then, how about further linking the first room-temperature ambient pressure superconductor phenomenon discovered by the Korean team with a similar biological superconducting mechanism?

[1. American Principles Statement]

Let's first look at Professor Griffin's research report published on the preprinted arXiv website. Professor Griffin said: South Korea's unconfirmed potential superconducting material is named "LK-99", which is made of lead (Pb) Apatite (P) has a slightly modified hexagonal structure, and a small amount of copper (Cu) has been added to allow it to exhibit superconductivity below 127 degrees Celsius.

"Hexagonal structure", which can actually resemble an orthocubic hexahedron or an oblique cubic hexahedron.

Prof. Griffin's team responded to this discovery by exploring the effect of copper substituting for lead positions in lead phosphate minerals on the properties of superconductivity. The results show that an isolated, exceptionally flat copper d-band is formed when copper replaces lead at a specific location, and unlike other related d-band superconductors, the copper d-band in this system is so flat that there is virtually no bandwidth broadening with neighboring oxygen ions.

Why is the copper d-band very flat? If the previous assumptions about the flatness of the band, driving superconductivity, are correct, then there is a more stable (higher temperature) superconducting phase in this system, even more so than in established high temperature superconductor systems.

What is a "stable superconducting phase"? Because Prof. Griffin's team also found that there is a preference for the exchange interactions of copper in different cells. This result is based on the assumption, albeit somewhat unrealistic, that copper ions are in the same substitution position in each cell.

Why does copper have a preference for different cells? What is this "preference"?

The experimental results also revealed that copper (Cu) substitution of lead (Pb) at other positions (Pb(2)

sites) does not appear to have such properties, highlighting the synthetic challenges of having copper substituted at the appropriate sites to obtain superconducting samples, said Prof. Griffin. This study provides important clues to understanding the superconducting properties in copper (Cu)-substituted phosphorus (P)-acid lead (Pb) minerals and provides an impetus for further research into the superconducting properties of such materials.

Professor Griffin, who studied the Korean team's LK-99 material at the Lawrence Berkeley National Laboratory in the US, said that it is indeed possible to have "room temperature superconductivity" at a theoretical level. However, it requires copper (Cu) to penetrate into specific locations in the molecule in order to achieve superconductivity. This means that the material would be difficult to synthesize and prepare in reality.

[2. One of the first room temperature superconductivity studies in Korea]

Among the members of the Korean research team is Hyun-Tak Kim, a professor in the physics department of the College of William and Mary in the United States, who is taking part in the research. In response to a reporter, he said that the LK-99 room-temperature superconducting material made by the South Korean team could be replicated within a month, and that its members would be available to mentor anyone who had trouble making LK-99. If someone, can break through room-temperature atmospheric superconductivity and eventually commercialize it, its immense value is likely to start the fourth industrial revolution.

A team of Korean researchers has posted a total of two papers claiming the discovery of room-temperature superconductors at atmospheric pressure on the arXiv platform, a preprint site. The abstract of one of the papers reads, We have successfully synthesized for the first time in the world a room-temperature superconductor (Tc over 400 K, 127 ºC) operating at atmospheric pressure with the structure of modified lead apatite (LK-99). The superconductivity of LK-99 is demonstrated by critical temperature (Tc), zero resistivity, critical current (Ic), critical magnetic field (Hc) and Meissner effect.

The superconductivity of LK-99 originates from a slight volume shrinkage (0.48%), resulting in minor structural deformations, rather than from external factors such as temperature and pressure. The shrinkage is caused by the substitution of Cu2+ for Pb2+(2) ions in the Pb(2) insulating network and generates stress. It is also transferred to the Pb(1) of the cylindrical column, leading to the deformation of the cylindrical column interface and the formation of a superconducting quantum well (SQW) at the interface. The "contraction" mentioned above is actually related to the Casimir effect mechanism.

The unique structure of LK-99, which allows tiny twisted structures to be maintained in the interface, is the most important factor in LK-99's ability to maintain and display superconductivity at room temperature and ambient pressure.

The abstract of paper bis is that a material named LK-99, a modified lead apatite crystal structure with the composition Pb10-xCux(PO4)6O (0.9<x<1.1), has been synthesized using solid-state methods. The material shows the ohmic-metallic properties of Pb(6s1) above the superconducting critical temperature Tc, and the levitation phenomenon of the Meissner effect of superconductors at room temperature and atmospheric pressure below Tc. The Tc of the LK-99 sample exceeds 126.85□C (400 K).

The analysis here suggests that the possibility of room-temperature superconductivity in this material is attributed to two main factors: first, the volume contraction due to the insulator-metal transition through the substitution of copper, for lead. The second is the enhanced on-site repulsive Coulomb interactions due to superconducting condensation at Tc and deformation of the structure of the one-dimensional (D) chain (Pb2-O1/2-Pb2 along the c-axis). The paper is a discussion of the mechanism at room temperature Tc, using the one-dimensional BR-BCS theory.

What is the most basic principle of "superconductivity"? The famous "BCS theory" is a theory of the basic principle of "superconductivity", but it is based on the principle of electron pair theory (BCS is the parallel pairing of electron pairs with opposite spins), is there a more basic principle that includes it?

[3. Korea's First Room Temperature Superconductivity Research II]

"IT Home" network reported on July 31, 2023, July 22, a team of South Korean scientists announced that they have discovered the world's first room temperature superconducting material ---- "modified lead apatite crystal structure (LK-99)", in causing a global physics sensation, but also attracted questions from the industry.

According to the video, the levitation of the LK-99 sample is not perfect, with one side still appearing to be in contact with the magnet. Asked why the sample was "imperfect," Prof. Hyun-Tak Kim said, "We are showing a video of the Meissner effect in a part of the sample, which is the evidence we found for the room-temperature superconductivity of LK-99. From now on, we have to create samples that trigger the Meissner effect 100% of the time." Some industry insiders believe that there are major inconsistencies in the two papers published by the Korean team on arXiv.

In response, Prof. Hyun-Tak Kim said, "This is a good challenge. In fact, we found an error in the second

paper before: one of the multipliers was inadvertently omitted when combining the two data together. So one of the data in this paper was wrong. Now we have uploaded the revised version to arVix. the revised paper will be available to everyone". But at present, the industry has not been successful in reproducing the South Korean team's experiments, but the "IT House" noted that there are a number of experts on the team's paper to question.

Professor Hong Zhiyong, director of the Shanghai Superconducting Materials and Systems Engineering Research Center and an expert in superconductivity application research, said, "The superconductors announced by the South Korean team are not room-temperature superconductors with great probability," Caixin reported. According to the existing situation the test means and methods reported by their team are not very orthodox experiments to verify superconducting materials. The experimental conditions previously published by Diaz's team were limited to 10,000 atmospheres, and the authenticity of the data was questioned because the data presented was too 'perfect'. But this time the Korean team is the opposite, they reported that the synthesis method of the material is very clear and simple, but the test method and the form of data presentation, as well as the degree of rigor of the data is very rough, and more and internationally recognized test methods to verify the superconducting properties of some of the gap is very large".

Prof. Hong Zhiyong added: "From the data presented so far, they are still only through the synthesis and cross-referencing, in the lead apatite compounds, which should not have obvious electromagnetic properties, were found to have a certain degree of electrical conductivity and weak antimagnetism at room temperature, but this electrical conductivity is still weaker than that of metallic conductors such as copper, silver, and so on, which is an interesting physical phenomenon, but the experimental results are still far away from proving that the samples are Superconductor, or that the sample contains superconducting components, is still far from." According to another surging news report, Professor Wen Haihu of the School of Physics, Nanjing University, said in an interview, "We carefully analyzed their data, from the three aspects of resistance, magnetization and magnetic levitation, are not enough to show that it is a superconducting material. We judged that the so-called superconductivity is most likely an illusion. For repeating the experiment, none of us wanted to do it. Later on, a student was also sent to work on it."

[4. Bio-superconductivity linked to room temperature atmospheric pressure superconductivity]

Even if the room temperature atmospheric pressure superconducting material discovered in Korea is true, there is nothing to be surprised about. Because biological superconductivity, itself, is a phenomenon that can manifest itself at room temperature and normal pressure.

In the early 1980s, the American biochemist James MacArthur made a molecular biochip, thus confirming that at room temperature, the flow of electrons in the biochip and other atoms or electrons collide with the opportunity is very small, almost does not produce resistance, so there is no heating phenomenon of the circuit, the consumption of energy is extremely small, and its switching speed can be comparable to the Josephson computer, reaching 10^{-6} seconds, almost close to the speed of light ---- This is what the scientific community calls the phenomenon of biological superconductivity.

And as a biological superconducting material in the nerve fiber, mainly composed of DNA. Its superconducting mechanism is now a macroscopic quantum phenomenon to look at the DNA molecular structure, similar to the double armchair spiral staircase of each lattice box is a quadrilateral structure, which is with the face spin, line spin motion, transposon of the optimal grid image is a quadrilateral there is no connection? Can it be understood in this way: electric and magnetic phenomena are macroscopic manifestations of the quantum phenomena of face spin and line spin in the space of matter; and the optimal grid image of the transposon for face spin and line spin motions is a quadrilateral, because from the demonstration model of face spin and line spin of a circle-like body transposon it is evident that if the grid pattern of the transposon is not a quadrilateral, it will bring about greater obstruction in the motions.

For example, if it is a circle or other polygons, although they can also make surface spinning and line spinning motions, the gaps they leave behind, the resistance and collision that exists in the polygonal polygon, as well as the fact that they cannot naturally transition according to the size required by the inner and outer annular grids in the course of the motions, will all impact the orderly degree of the motions.The space of the DNA lattice, although it can not be said to be moving as a rotating pedestal, the four edges of the DNA lattice, as the current surfaces, can be viewed as to be in nontrivial line-spinning motion. Therefore, no matter how complicated the mechanism of biological superconductivity is, in connection with the mathematical principles revealed by the dynamical analysis of three-rotation motifs, one thing is at least certain, that is, the nontrivial line-spin structure in DNA crystals of room-temperature atmospheric-pressure biosuperconducting materials is the most important prerequisite for the macroscopic quantum mechanism of biosuperconductivity.

Many scientists also believe that copper oxide superconductors may never reach the goal of being able to operate at near room temperature, but certain organic compounds may have a better chance. This is exactly

what the mechanism of three-spin biological superconductivity predicts. If one associates DNA with the three-spin image, right-handed DNA corresponds exactly to right-slanted nontrivial line spins; left-handed DNA corresponds exactly to left-slanted nontrivial line spins. Secondly the graphical changes in the movement of the three-spin motifs can also be linked to the double helix structure of plane base pairs one after another, which can be transposed through a variety of pathways interacting with other molecules in the cell. However, there is still a long way to go to learn the most basic principle of superconductivity, the famous "BCS theory", which is the unification of biological superconductivity with the superconductivity mechanism of "modified lead apatite crystals".

[5. From Onnes to Cooper on the theory of superconductivity]

a. Mystery of Onnes

In 1914, Onnes did an experiment to open up the precedent of superconductivity: he will lead wire into a closed circle, placed in a magnetic field, so that the direction of the magnetic field is perpendicular to the circular plane of the ring, and then let the lead ring immersed in liquid helium to cool down, when the coil enters the superconducting state, remove the external magnetic field, which is in the closed superconducting coil in the sense of an induced electric current.

Since the superconducting resistance was zero, could this current be maintained for a long time? Later, someone re-did this experiment in a more refined way, using a magnetically strong needle placed in the center of a lead ring, and proved that the current in the coil was not found to decay in the slightest way after several years. The extremely low temperature and the rotation of the loop current with the magnetic lines of force out of the south pole and in from the north pole are typical of the phenomenon of three-spin space.

That is, the triple-spin quantum number, where the body-spin corresponds to the temperature, the surface-spin to the electric current, and the line-spin to the magnetic field. Triple spin is an inherent property of matter in the microscopic realm, but no one in the "scientific and technological community" has made any connection to this hidden order since Onis 109. Considering superconductivity as a phenomenon of soft matter analogous to granular matter, there is a way to relate it to the theory of triple spins, for example, by drawing a grid of longitudinal and latitudinal lines on a torus-like body, which we call a transposon. That is, the class circle body is divided into ring segments, ring segments and divided into grids, made a kind of magic like the magic way of the magic ring device; of course, this grid can be large or small, any take a grid or a point can be in the class circle body or with the class circle body, around the center circle line in the class circle body is composed of the center of the circle of the axis of the rotation, or around the center circle line rotation. In the class circle body, if this "particulate matter" similar to the grid and the point block is called the transposer, this transposer type particulate matter is also both similar to the solid, flow and like liquid, gas, and there is a group effect of the movement, as well as the shape of the grid pattern and the layout of the pattern is regular.

Generally speaking, the lattice for ordinary line spins is square, and the lattice for extraordinary line spins is prismatic. If the motion of the transposon group effect is set up to square and prismatic respectively, the two kinds of transposon lattice, such as square, both left and right movement and up and down movement; such as prismatic, but can not be, because of this vertical and horizontal movement will be the tip to the tip, the two oblique edges of the pressure at the same time, can not be neatly movement down, only for oblique movement. But it is not correct to say that a square carousel pattern must move in a plain line rotation, and a prismatic carousel pattern must move in an uneven line rotation. The reason is that it is the number of wraps, i.e., the number of consecutive edges of the diagonal mesh that are at least one closed line around the ring, that is crucial in distinguishing a plain line spin from an uneven line spin.

Generally speaking, the square mesh block is parallel to the side of the center circle line in the class circle, can only make ordinary line spin, also can make face spin alone. Prismatic mesh block or square is diagonally arranged, whether it is for non-trivial line spin, we have to check whether there is a number of circles; but one thing is certain, they can not be alone for the surface spin, its surface spin is combined with the line spin. This locking of the lattice shape and pendulum determines that the transposon motion is faceted, which is linked to the fact that superconductivity does not depend very much on the three-dimensional coupling between the superconducting thin layers, and expresses a more obvious two-dimensional mechanism.

Second, just as playing hula hoops can move up and down the body, the three-spin image also illustrates this strict two-dimensional restriction in that for an electron pair of such small three-spin loops, in the presence of line-spinning streamers crossing the planes and at temperatures as low as Tc or below, it can also tunnel coherently from one planar plane to the other through the Josephson effect, whereas it cannot do so for a single electron.

Based on the above study that the optimal network for a three-rotation motif is square or prismatic, the search for room-temperature atmospheric-pressure superconductors should begin with materials in the class of hierarchical rhombohedral lattices, since they approach an ideal macroscopic quantum effect. If the

current is passing through such crystalline surfaces, then when connected to an external circuit, it constitutes a loop state, and the formation of nontrivial line spins is easy on this circuit of matter. The nontrivial line spins have combined the face and line spins, and this is shown precisely by the macroscopic quantum phenomena of electricity and magnetism. The second body spin, roughly speaking, is a flipping, which is connected with macroscopic temperature effects; the higher the temperature, the greater the collision and flipping, which is not conducive to the coherence and coordination of electron pairs. So room temperature atmospheric superconductivity from the macroscopic point of view, to choose the lattice is not conducive to flipping.

The triangular network is not as orderly as the square motion on the face and line spins has been ruled out, and the square is not easy to turn over because it has the least rounding compared with other square polygons, so from the macroscopic mathematical analysis of the three spins, the layered rhombohedral crystal dominates for this type of superconductivity.

B. The Cooper electron pair mystery

Cooper in 1956 in exploring the micro-mechanism of superconductivity, considered such a problem: a filled Fermi sea, plus two electrons, the electrons have an attractive force, the minimum intrinsic energy of the electron system and the corresponding eigenstates. Calculations show that the minimum intrinsic energy is less than the minimum intrinsic energy when they are free, i.e., the two electrons form some kind of bound state.

Relative to this bound state, the originally free case is precisely an excited state, or the destruction of this electron pair produces a meta-excitation of the system, and the energy difference between the two is providing the energy gap. And the eigenstates of this bound are a pair of electrons with momentum k and spin direction s and momentum -k and spin direction -s. Such a pair of electrons has been called a Cooper pair.

As Cooper considered two electrons and all have filled the Fermi sea, in this two-body problem, since the two externally added electrons will be paired to form energetically favorable bound states; then the electrons in the vicinity of the Fermi surface can also be excited to the outside of the Fermi surface, paired and form energetically favorable bound states, in this case, the whole Fermi surface is unstable, and should be considered in the vicinity of the Fermi surface of the two sides of the energy is equivalent to the most In 1957, Bardeen, Cooper, and Schrijver, based on Cooper's two-body problem, considered the problem of multi-electron systems, and finally proposed a successful theory explaining the micro-mechanism of superconductivity, which is the famous BCS theory (Bakusch's theory).

In this theory, the Hamiltonian quantity of the system consists of two parts. One part depicts the free motion of the electrons, and the other part depicts the interactions that cause the electrons to mate into Cooper pairs. The electronic system in the superconducting state is in a sense an open system, it is only a portion of the electrons near the Fermi surface, and since the number of pairs of electrons is not fixed, or rather the number of electrons is indefinite, the superconducting ground state should be the state consisting of the superposition of the unpaired electrons with the state having an arbitrarily possible Cooper pair.

But Korea's "modified lead apatite crystal" superconductivity mechanism, and BCS electron pairing mechanism is different, they can be unified? Due to the existence of strong interatomic proximity exclusion, the two particles constituting the bound pair of relative orbital motion in the non-zero l = 1 state, the energy is favorable, in order to ensure that the fermionic wavefunction exchange anti-symmetric, the spin part of the wavefunction must be symmetric, i.e., the spin is a parallel pairing (BCS is a spin-antiparallel pairing) of. Ring Quantum Triple Spin and Superconductivity Room Temperature Atmospheric Pressure Theoretical Connection Superconducting rings, first and foremost, are ring quanta present in microscopic matter.

For example, contemporary superstring theory finally recognizes that all elementary particles, such as electrons, quarks, etc., are one-dimensional extended bodies, not point-like bodies as assumed in traditional physics, and that they are either in the form of rings or lines, always vibrating and colliding; and that different forms of vibration and collision determine the properties of the string, such as charge and spin, and so on, and that is, the elementary particles corresponding to the string.

The endowed triple spins belong to microscopic quantum phenomena, where there is a very deep and organic connection between the mass of the particle and the rotational moment of the particle. For example, a typical three-spin picture is that the body spin corresponds to temperature, the surface spin to current, and the line spin to magnetic field. Further using the three-spin picture to recognize the unified mechanism of the lattice morphology and transitions of superconducting materials from low temperature to room temperature and atmospheric pressure, and from inorganic to organic, the carrier pairs (electron pairs or hole pairs) are by their nature a kind of small triple-spin ring, and it is the large triple-spin ring in the lattice that leads to the carrier pairing. This is analogous to playing the game of flying rings, which fly out and back, with spin and throwing forces. The electron pair is actually the small three-spin loop that is formed, and the phonons are the prime mover that creates it and throws it ---- This is the case for low temperature superconductivity.

The case of room-temperature atmospheric superconductivity is much more complex, is there

something else that causes the electrons to pair up, forming many of the current new theoretical directions? But no one in the "scientific and technological community" since Cooper '67 has contacted the superconducting "holographic bricks" similar to the "hexagonal structure" of the hidden order.

For example, the "breathing" image in the soft phonon model is a typical isolated line spin: the oxygen atoms around the copper atoms in the lattice move in and out of the lattice regularly, and as the temperature decreases, the "breathing" becomes gentle, and the oscillations stop at a certain temperature; the resulting "frozen" phonons cause the electrons to couple strongly, thus showing a higher transition temperature. The resulting "frozen" phonons strongly couple the electrons, resulting in a higher transition temperature.

Another example is the exciton model, the exciton is an electron into a higher energy state caused by the hole circle, and then move back to the low-energy state, that is, the electron will be neighboring electrons to repel away from a "polarization cloud" circle, the second electron due to the polarization of the cloud circle and reduce the energy and the formation of electron pairs with the first electron. Some also envision the virtual particle of a "magnetic oscillator" causing electrons to attract each other. Some also envision strong coupling of electrons occurring on the basis of antiferromagnetic spin up and down. Some even envision a pair of fermions and a pair of bosons, each of them separated from the two halons can also form a boson, the nature of which is between fermions and bosons, and these halons can produce bosonic condensation circles under specific conditions, resulting in the emergence of superconductivity, and so on. However, the three-spin image can communicate with all of them and give a complete and natural explanation for many superconductivity puzzles.

A triple spin is a two-group Shimei structure in the sense that it contains a ring-like structure. Since the torus is not the same as the sphere, a physical semantics should be specified for the spin. Spin: there is a fixed axis or turning point, can organize the rotation surface at the same time, and can be found in the rotation surface at the same time symmetric moving point and trajectory overlap of the rotation; spin: there is a fixed axis or turning point, but can not be organized at the same time the rotating surface, can not find at the same time symmetric moving point or symmetric point of the rotating surface or a symmetric moving point of the rotation of the trajectory also does not overlap; rotate: there is no fixed axis or turning point, can not be organized at the same time the rotating surface, and not at the same time symmetric moving point, but trajectory symmetric moving points, but the trajectory is a closed line of rotation.

The definition of spin is that there should be three kinds of spin for a torus-like structure, surface spin: rotation of the torus-like body around an axis perpendicular to the surface of the torus; body spin: rotation of the torus-like body around an axis within the surface of the torus; and line spin: rotation of the torus-like body around the line of the center circle within the body. The three-spin picture gives a new proof that "the whole is not the same as the parts" and challenges contemporary holism by not making a geometrical distinction between the torus and the sphere.

Because of the three-spin at least two or more symmetrical motion and the direction of the opposite moving point, which is the same momentum and two electrons with opposite spins are attracted to each other, the formation of bound electron pairs to do the overall motion similar. However, this electron pair movement is still only a small three-spin circle, is the formation of superconductivity is a necessary condition, not a sufficient condition. From the electromagnetic wave absorption experiment proved that the electronic energy spectrum of superconductors has an energy gap, according to the BCS theory, its superconducting ground state can be expressed as a Hamiltonian function.

In room-temperature atmospheric pressure superconductivity, the electrons are structured not by attraction but by their being pushed together by other electrons to form superconductivity; starting from the Hamiltonian function of the Hubbard ferromagnetic model of finite potentials with repulsion, the superconducting energy-gap equations, which are very similar to those of the BCS theory, are finally derived. The mechanism for the lattice morphology of room-temperature atmospheric pressure superconductivity is that the search for room-temperature atmospheric pressure superconductivity should firstly pay attention to materials in the class of laminar rhombohedral lattices, based on the previous study that the optimal lattice for a three-rotation motif is square or prismatic. However, this does not exclude lattices of other shapes, such as prismatic octahedra.

Secondly, the etched surface of the metal typically shows a lot of grains piled up with each other in the chaotic scene, but why does not prevent the metal conductive? This is because the metal conducts electricity, is the result of directional movement of free electrons in the metal; free electrons directional movement, from time to time and in the lattice on the interaction of positive ions and collisions, and free electrons to be hindered by the lattice scattering effect, resulting in resistance; when the temperature is lowered to below the critical temperature, the indirect force between the electrons to overcome the Coulomb repulsion, so that the momentum and the direction of the opposite spin of the The two electrons form a Cooper electron pair circle, which facilitates the transition of the object to a superconducting state.

And grains are the natural result of crystal growth. Each grain is a crystal of individual, orderly arranged atoms, and as the metal solidifies, the many tiny crystals that form inside the liquid begin to grow until each crystal crushes into its neighboring crystals.

It is the intricate interplay of physical forces and geometrical filling space requirements that defines the final grain interface. This is another macroscopic quantum phenomenon, if the grain is regarded as a quantum class circle, the temperature decreases, not only for the body spin weakened, but also the circle of the body of the spoke vibration is also weakened. In fact, at low temperatures, the lattice of the metal will also change, such as white tin into powdered gray tin when super-cold. Class ring body body spin weakened, but also reduces the resistance to the movement of free electrons.

[6. Harmonization of electron pair and Casimir plate pair effects]

For proposing the BCS theory, Bardeen, Cooper, and Schrijver were jointly awarded the Nobel Prize in Physics in 1972. The theory is considered one of the most important contributions to theoretical physics since the development of quantum theory. For one thing, the BCS theory suggests that in superconductors the attraction provided by the interaction of electrons and lattice vibrations (phonons) outweighs the Coulomb repulsion between the electrons, so that two electrons with energies and spins of the same magnitude and in opposite directions form a bound pair of electrons. Here, even if the electron pair is considered to be similar to a small ring and surface spin, but like a fly-away mold, phonons and Coulomb repulsive forces are concentrated in the "fly-away" on the "can be" scattered "to become a superconducting solitary wave in the lattice of the flow.

However, the BCS theory of electron pairs, only with the "fly away device" such as the pair of solitary wave explanation is also still not enough. That is, in 1986, Bernolds and Müller discovered 35K superconducting perylene-barium-copper-oxygen system, followed by the discovery of new superconductors covering copper-oxygen compounds, fullerenes, iron-based and organic superconductors and other superconducting systems, the BCS theory of the electron-pair explanation seems to be difficult to deal with. It is not that the BCS theory of electron pairs is wrong, and does not extend to contact superconducting "holographic bricks" similar to the "hexagonal structure" hidden order of Casimir plate pair effect of this superconducting nature.

Why does the Korean paper say: "The superconductivity of modified lead apatite (LK-99) originates from a slight volume contraction (0.48%), which causes a small structural deformation, and not from external factors such as temperature and pressure". The reason is that the "Casimir plate pair effect" is similar to the "holographic bricks" of the "electron pairs of the BCS", and there is a "shrinkage" effect similar to the invisible transport of quantum tunneling. "contraction" effect similar to the invisible transmission of quantum tunneling.

Both can be illustrated by the three basic diagrams of quantum electrodynamics of the photon's response to charge represented by Feynman diagrams, in particular the "all-virtual-process" diagrams in that diagram: the exchange of a virtual photon between two electrons, or the exchange of a virtual photon between an electron-circle diagram, which can be generated in the middle of the virtual photon's line of force. This kind of virtual photon can have more than one line of force between them, and the electron circle diagrams produced in the middle of one line of force of the virtual photon can have more than one between them, which is similar to some elements of the chain of soliton demonstrations. But how to link them in a complete way, the cubic and hypercubic of quantum color-motion geometry can correspond to the element oxygen in a room-temperature atmospheric pressure superconductor.

The derivation of exogenous quantum chromodynamic effects of the element oxygen from the plate pair of the Casimir effect linking the quantum rise and fall of the vacuum is long overdue. Plane and three-dimensional geometry tells that 3 points can form a plane and 8 points can form a cube. Two square triangles can form a 6-point pentahedron. The Casimir effect is larger for a cube than for a 6-point pentahedron. By replacing these "points" with proton numbers, the cube becomes the element oxygen and the hexahedron becomes the element carbon. 16 points form a hypercube. Among the atoms of the chemical elements, there are neutrons of similar mass to the protons, so why is the number of protons alone the criterion for identification?

The reasoning is, one, to capture the main conflict. Two, the proton is similar to the leader. But precisely because they are leaders, their nature is different. Based on the 8-point cube and 6-point pentahedron, add a point on one face of their Casimir effect plate, so that the stacking and expansion for a variety of geometric figures, and associated with the number of protons corresponding to the point of the chemical properties of the atomic elements, for quantum chromodynamic analysis, known as quantum chromatic dynamics geometry.

The oxygen specimen of quantum color-motion geometry, the heart of the Casimir effect. As can be seen above, the ideal quantum color-motion geometric pattern of the nucleus of a carbon atom with 6 protons is a five-sided stereoscopic image containing parallels formed by the joining of two triangles; known as the carbon-based quantum color-motion geometric image.

And the ideal quantum color-motion geometric pattern of the nucleus of an oxygen atom with 8 protons is a square cube image with parallel top and bottom, left and right, front and back, formed by joining two squares; called the oxygen-based quantum color-motion geometric image. Thus, in quantum chromodynamic chemistry, the carbon-based quantum chromodynamic geometries are "more economical" than the oxy-quantum chromodynamic geometries, but not as powerful as the 3-pair Casimir plate effect with symmetry of top and bottom, left and right, and front and back. But it is this quantum interaction force, which is the most basic experimentally verifiable force, that oxygen occupies the first place among the top 9 most distributed elements in the earth's crust. It is also the chemical fine-tuning of this force over billions of years in countless major earthquakes and volcanic eruptions, etc. in the earth's crust that oxygen has taken the top spot.

That is, this most parsimonious number "8", similar to the 8 vertices of a square, is also the closest and most parsimonious empirical and a priori image of a pair or three pairs of Casimir effect flat plates, up and down, left and right, front and back, both locally and globally. It is for all natural numbers, including even all real and complex numbers, the latter are infinitely many, but "8" is only one, which makes the probability of 8, in nature, is only one in an infinite number, i.e., similar to no miracle can happen.

But why does the miracle happen in room temperature atmospheric pressure superconductor materials? This is to explore the exogenous quantum chromodynamic chemistry of room-temperature atmospheric pressure superconductors from quantum chromodynamics and quantum chromodynamic geometry, which is similar to the kite flying up to the sky, which is different from the types of airplanes flying up to the sky, rockets flying up to the sky, hydrogen balloons flying up to the sky, Kongming lanterns flying up to the sky, and birds flying up to the sky, etc., and it is to make use of the ebb and flow effect of the exogenous self-born quantum chromatic charge cloud energy. The mechanism of various types of room-temperature atmospheric pressure superconducting materials is not exactly the same as the BCS theory, so some quantitative mathematical descriptions of room-temperature atmospheric pressure superconductivity are not as successful as BCS in low-temperature superconductivity.

Secondly, the quantum brain and superconducting invisible transmission equipment development, even if the search for the interface layer of the atomic thin-layer encounter at room temperature to obtain compatible with both magnetic and superconducting, similar to lanthanum aluminate and strontium titanate two composite oxides of the new characteristics of the new material, but the invisible transmission of computing and storage equipment, in addition to the outside world that the input of the energy, why is it similar to the energy of the chain of solitons and the information transmission cruises need to be mirrored in it Room temperature atmospheric pressure superconductivity energy gap can be so small, even negligible? Where does the energy come from for a quantum transport cruise that mirrors invisible transport? Could superconductivity and invisible transport violate the law of conservation of energy? In fact, superconductivity and invisible transport is itself a quantum engine.

For example, in 1914 Onnes made a closed circle of lead wire, so that the direction of the magnetic field is perpendicular to the circular plane of the ring, and then immersed in liquid helium to cool down into the superconducting state after the removal of the external magnetic field, closed superconducting coil of electric current induced within the persistent cycle, on a classic quantum engine model. And what is the nature of superconductivity, to put it bluntly, purely magnetic? It is one of the types of dark matter.

Onnes' lead wire closed circle immersed in liquid helium cooled down into the superconducting state, remove the external magnetic field, the circle of the induction of the circulation of the flow of more than the current, and along the circle of spontaneous induction of a set of penetrating the flow of the inner circle of the circulation of more than the flow of the magnetic lines of force, each of which a separate line of magnetic force is also a quantum of the closure of the circle. Taking one of the individual quanta of magnetic lines of force is called a magnetic monopole quantum.

With the entire lead wire closed circle induced magnetic field N and S pole orientation, the spin of the magnetic monopole quantum can be divided into two kinds of N sub and S sub. Secondly, corresponding to electromagnetic wave propagation, the changing electric field outputs changing magnetic field, and the changing magnetic field outputs changing magnetic field, viewed as a double-ring braided state, the electric ring changes the electric field is called D-ring; the magnetic ring changes the magnetic field is called C-ring.

In the theory of electromagnetic wave propagation similar to superconductivity, quantum invisible transmission with double ring D-ring and C-ring mutual sensing and flip symbiosis, there will be innumerable flying more microscopic singlet chains similar to the electron to particle surroundings due to the introduction of magnetic monopole quanta. Such single chains can also be selectively encoded with the probability of forming a double-chain-like chain of solitons. The resulting vacuum quantum ups and downs similar to superconductivity, quantum invisible transport, producing vacuum ghost fields, ghost states, ghost circles, ghost vertices, ghost degrees of freedom, etc., similar to annihilation, give a demonstration of soliton

chain molds.

Since magnetic monopole quantum involves dark matter, even though they cannot be captured, experiments can measure their physical, chemical, biological and other effects. So similar to Maxwell's electromagnetic field quantum electromagnetic wave propagation of the magnetic ring C and the electric ring D circle lasso coupling, and then substitute for the Li group of mathematics to the surface spin and line spin coupling description, known as similar to the soliton chain of U (1) local symmetry group of the soliton chain type of energy and information coupling cruising motion. However, the soliton chain can demonstrate not only the U(1) local symmetry group, but also the SU(2), SU(3) local symmetry group and the combinatorial choices between U(1)SU(2), SU(3).

Most of the microscopic particles are charged, and their electrons polarized in the mesonic vacuum can also produce non-radioactive decaying weak force quantum engines similar to soliton chains of energy and information coupled to roving assemblies. Specifically with respect to superconducting quantum engines, the classical explanation says that electrons vibrate with the lattice interacting with the lattice vibrations and produced: in superconducting state metals electrons are attracted to each other using lattice waves as a medium to form electron pairs In superconducting metals, the electrons are attracted to each other by lattice waves and form pairs of electrons. object to form an overall flow similar to that of a chain of soliton soliton waves. From the effective energy gap, pseudo energy gap and superconductors in the ground state and excited state, experiments have confirmed that similar to the use of high-energy ultraviolet light irradiation of magnesium diboride crystals, the superconducting electron pairs will be separated from them by the "angular decomposition of the photoelectron spectroscopy" method to observe its energy state, found that there are boron atomic layer σ-electrons to do two-dimensional motion, π-electrons according to the direction of The energy gap of σ-electrons is 3--4 times larger than that of π-electrons.

Quantum states are the states of particles such as atoms, neutrons, and protons. If the physical properties such as energy, rotation, motion, magnetic field, etc. that characterize a quantum state are regarded as quantum information, then this quantum information also contains the conjugate states of its physical properties, so that the quantum information of a particle is often multiconjugate. This is mostly dealt with in elementary particle physics using the Standard Model and supersymmetric theories. The contradiction between the macroscopic and microscopic perceptions is sharpened by the fact that one side, represented by Einstein, has always recognized that quantum mechanics is not a complete theory, while the other side, represented by Bohr, the leader of the Copenhagen School, is convinced of the correctness of the quantum theory.

Firstly, while inheriting the spherical quantum model of macroscopic objects, quantum mechanics abandons the concept of spin of spherical quantum and establishes another set of spin concepts different from that of macroscopic. This is due to the wave-particle duality of the quantum object, forcing people to introduce the wave function (quantum state) to describe the state of the quantum object, the quantum world's strange properties are originated from this quantum state. So what is the concept of the state of this quantum object according to the macroscopic characterization? It is a concept of indeterminacy that seems both rigid and fluid, both complete and broken "fuzzy body".

Spin is not like advection. While advection is similar to a tendency towards a diffuse or dispersive state, spin is more like a condensed "body". The cyclic quantum three-spin model is not a change in orthodox quantum mechanics per se, but only a small change in orthodox quantum theory per se. That is, since Shoichi Sakata opposed the "point" model of the Copenhagen school of quantum mechanics, which is indivisible, and advocated the "body" model, which is divisible, the "body" of a quantum state can have a spin similar to the spin of a macroscopic object, which makes it possible to have a spin similar to the spin of a macroscopic object. Macroscopic object spin, which makes our country prematurely triggered the ball quantum and ring quantum debate. This is because the endowed spins of ring and sphere quanta are different.

For example, the spin of a ring quantum has three "endowed" motions: there can be a body spin ---- rotating around an axis inside the ring surface; a face spin ---- rotating around an axis perpendicular to the center of the ring surface; and a line spin ---- rotating around a toroidal centerline inside the ring. The body spin of the three spins has two states (positive and negative). The face spin has two states (positive and negative). Plain line spins in line spins have two states (positive, negative); nontrivial line spins in line spins have four states (left-slanted positive, negative; right-slanted positive, negative). The ring quantum can have 62 different combinations of three-spin states according to single-motion (only one spin), double-motion (two spins at the same time), and triple-motion (three spins at the same time). The line spin is similar to the macroscopic vortex, so the ring quantum can complete both like a rigid body and like a fluid, both like a complete and like a rupture of the "fuzzy body" of the concept of uncertainty, and therefore the nature of the wave function, such as Schrödinger's view of the fluctuation equation, the wave field is concentrated in the formation of a small space within the wave group or wave packet of the interpretation of the explanation of a clear, and can also solve similar to the "Schrödinger's". It can also solve many problems of macroscopic and

microscopic divisions, such as the "Schrödinger's cat" feint and the "EPR feint". This is the multiconjugate quantum state in which multiple spin-like endowments of ring quanta exist.

[7. Why superconductivity is a hexagonal structure]

a. Three spins with electricity, magnetism and temperature

Superconductivity, a phenomenon in which the electrical resistance is zero and the magnetic induction strength is zero at a certain temperature, magnetic field and current. Mathematical explorations of the lattice morphology and trans-control mechanism of room temperature atmospheric pressure superconducting materials indicate that superconductivity is a typical three-spin phenomenon. That is, the three-spin quantum number, the body spin corresponds to temperature, the surface spin corresponds to current, and the line spin corresponds to magnetic field. Triple spin is an inherent property of matter in the microscopic realm, but no one has contacted this hidden order for many centuries.

Three spin contact circle state, in the class circle body with warp and weft lines drawn grid, that is, the class circle body is divided into ring segments, ring segments on the grid, make a kind of magic like the magic way of the magic ring device, of course, this grid is can be big or small; any take a grid or a point can be in the class circle body or with the class circle body, around the class circle body center ring road composed of the center of the circle of the axis of the rotating or rotating around the center of the circle line, we call this kind of grid and the point of the block for the transposons. Rotators are formed into a group effect movement, so the shape and layout of its grid pattern is regular. Generally speaking, the grid for ordinary line rotation is square, and the grid for non-ordinary line rotation is prismatic. Now the diagrams are analyzed in detail:

Fig. 1 uses squares, and Fig. .2 uses prisms to illustrate the lattice of two kinds of transposers on the surface of one side of a class of circling bodies, and the upper and lower parts of the two figures are set up as the poles of the class of circling bodies; left-right motion is a face-spin, and up-down motion is a line-spin. The square of Fig. 1 moves both left and right and up and down, which is a plain line spin.

The prism of Figure 2 can neither move up and down nor move left and right, because this horizontal and vertical movement is the tip-to-tip, the two slanting edges are pressurized at the same time, and can't move down neatly, but can only make oblique movement belonging to the non-trivial line spinning. The shape of this network pattern and the locking of the pendulum is exactly as a technical basis for the analysis of room temperature atmospheric superconductivity and biological superconductivity mechanism.

Because if the rotors were in a pattern of varying shapes and random placement like the milfoil now on the terrazzo floor, they would not be able to move in an orderly fashion at all. And the trick to analyzing the mechanism of superconductivity is to show what is the significance of the crystal network of superconducting materials? According to the above study of the optimal network of three-rotation motifs as square or prismatic, the search for room-temperature atmospheric-pressure superconductors should first pay attention to the hierarchical rhombohedral lattice class of materials, because they are close to an ideal macroscopic quantum effect.

If the current is passing through such a crystalline surface, then when connected to an external circuit, it constitutes a loop state, and the formation of nontrivial line spins is easy on this circuit of matter. The nontrivial line spin already combines the face and line spins, as shown by the macroscopic quantum phenomena of electricity and magnetism. Secondly the body spin, roughly speaking, is a flipping, which is connected with macroscopic temperature effects; the higher the temperature, the greater the collision and flipping, which is not conducive to the coherence and coordination of electron pairs. So for room-temperature atmospheric pressure superconductivity, macroscopically speaking, it is important to choose a lattice that is not favorable to flipping. Triangular network in the face spin, line spin is not as orderly as the square movement has been ruled out, and the square and other square polygonal comparison, it tends to round the smallest, so it is not easy to flip, so from the macroscopic mathematical analysis of the three spins, laminated rhombohedral crystals for room temperature atmospheric superconductivity occupies an advantageous position.

But it is not right to say that the rotator pattern of the square must make ordinary line spinning motion, and the rotator pattern of the prism must make non-ordinary line spinning motion. Because, if the square shape according to the prism as the pendulum ---- up and down, right and left corner to corner, also can only make oblique movement; but they are not ordinary line spin? Not necessarily! Because what is crucial in distinguishing a plain line spin from a nontrivial one is the number of wraps, i.e., the consecutive edges of the diagonal mesh are closed lines that go at least one week around the ring.

Generally speaking, the square mesh block is parallel to the side of the center circle line in the class circle body of the pendulum, can only make ordinary line spin, can also be alone for surface spin. Prismatic net block or square is diagonally arranged, whether it is not ordinary line spin, we have to check whether there is a circle number; but one thing is certain, they can not be alone for surface spin, its surface spin is combined with the line spin.

Now to give a definition of the nontrivial line spin: if a group of motion direction of the rotor subchain of the first and last, the existence of at least one more than the number of encircling the closed curve of the rotation, it is called the nontrivial line spin; on the contrary, there is no encircling the number of only around the class of the circle within the center of the circle of the line of the rotation, called the ordinary line spin. The study of the mechanism of superconductivity is to avoid the real approach, which of course, to capture the most essential features of the lattice structure of the real material ---- macroscopic is linked to the microscopic, relying on the vibration of thousands of atoms and electrons, spin, shift this most active three-spin factors, in turn, to express the macroscopic superconducting phenomena. The dynamic structure simulation of three-rotation motifs also has such a feature, and it is a demonstration of thousands of atoms and electrons moving into the established program that can be observed and felt by human beings; it is not a kind of coordination of appearances, but an intellectual feature that can be experimented by everyone. Based on the previous study that the optimal lattice for a three-rotation motif is square or prismatic, the search for room-temperature atmospheric-pressure superconductivity should begin with attention to materials in the class of layered rhombohedral lattices.

b, Superconducting holographic brick quantum mechanics revisited

Superconductor, as the name suggests, is no energy dissipation after the current conductor, it is due to a large number of paired electrons condensed to a "consistent" coherent state, its movement is not the result of lattice scattering. "Holographic tiles" refers to the highly realistic holographic image display; the chemical element proton is born after the Big Bang, the human regime political parties are born after the civilization of the Great Divide, can we use similar axioms in the natural sciences to unify the guide? From the advanced encapsulation of the concept of "dual-core iteration", perhaps natural sciences + social sciences = 2, before it is called "holographic bricks". Natural science + social science > 2, similar to the emergence of packaging "two chips to generate power consumption and heat, can not be called" holographic bricks "---- This may be off-topic, talking too far.

"Holographic Brick" specifically linked to the U.S. LBNL Professor Griffin said: "Korea's unproven potentially superconducting material named "LK-99" is made of lead (Pb) phosphorus (P) chert, with a slightly modified hexagonal structure. The structure is slightly modified hexagonal by the introduction of a small amount of copper (Cu), which allows it to exhibit superconductivity below 127 degrees Celsius. ..... The copper d-band in this system is very flat, with almost no bandwidth spreading with neighboring oxygen ions". The actual superconducting "holographic bricks" can be similar to the "hexagonal structure" of the orthocubic or rhombohedral hexahedron, then the nuclei of the elements lead (Pb), phosphorus (P), copper (Cu), oxygen (O), etc., the number of hidden protons, how strange?

The Periodic Table seems to have created a "smart brain" for all chemical elements ---- characterizes the movement information of the physical and chemical world into a series of mathematical arrangements with the number of proton sizes, and the key to the problem is to break through the hidden special mathematical structure behind the complex number of protons, and to make it simpler and simpler, which can only be achieved by using the overstretched resources of the human "smart brain". The problem can only be solved by utilizing the stretched human "intelligent brain" resources.

Did Proton Time observe the phenomenon of transverse wobbling of atomic nuclei, a perfect breakthrough? No. Because few theoretical chemical physicists in the global "science and technology community" have yet entered the field of quantum chromodynamic chemistry. But there is something else here, such as the atomic number Z in the periodic table of elements, equivalent to the number of protons contained Z, "good proton number" proton group theory "holographic bricks", from the Casimir flat-pair effect, the economy of atoms, the economy of the formation of string squares, the utilization rate, By-products, energy, safety, etc., the "good proton number" of the wave function, density functionals, hybridization functionals, etc., the synthesis of formulas and "3N" and "4n" variable functions of the number 3 The following formulas have been proposed for the number selection of "3N" and "4n" variable functions, such as 4, 6, 8, 7, 12, 14, 16, and so on:

$$Z = (3 \times N) + (4 \times n) \quad (3\text{-}1)$$

For example, there are atomic nucleus proton number wave functions for lead (Pb-82Z), phosphorus (P-15Z), copper (Cu-29Z), and oxygen (O-8Z), as mentioned by Prof. Griffin above:

Lead

(Pb-82Z): $Z=(3\times N)+(4\times n)=(3\times 14)+(4\times 10)=82$

Phosphorus

(P-15Z): $Z = (3 \times N) + (4 \times n) = (3 \times 5) + (4 \times 0 = 15)$

Copper

(Cu-29Z): $Z=(3\times N)+(4\times n)=(3\times 7)+(4\times 2)=29$

Oxygen (O-8Z): $Z=(3\times N)+(4\times n)=(3\times 0)+(4\times 2)=8$

That is, lead (Pb-82Z) has a "good proton number" equivalent to 7 carbon proton number sine-square structures (6 x 7), plus 5 oxygen proton number sine-square structures (8 x 5), and phosphorus (P-15Z) has a "good proton number" equivalent to 2 carbon proton number sine-square structures (6 x 2), leaving a "good proton number" of 3. Phosphorus (P-15Z) has a "good

proton number" equal to 2 carbon protons (6×2), leaving one "good proton number" of 3. Copper (Cu-29Z) has a "good proton number" equal to 3 carbon protons (6×2), leaving one "good proton number" of 1. Copper (Cu-29Z) corresponds to 3 carbon protons (6 x 2), leaving a "good proton number" of 3: plus 1 oxygen proton number (8 x 1). The "good proton number" of oxygen (O-8Z) corresponds to one oxygen proton number string structure (8×1). Why?

[8. Lead apatite plus copper superconducting plasmonic space-time math mystery]

a. Nature and society holographic brick wisdom unified mathematics

The integrated formula $Z = (3 \times N) + (4 \times n)$ for the wave function, density generalization, hybridization generalization, etc., of the quantum "good proton number" demystifies the spatio-temporal separable and indivisible variations of the experimental proton number of the elemental chemistry, and determines that the reactions, from the ordinary chemical reactions to the nuclear chemical reactions, are based on the protons contained in the nuclei of the atomic atoms of the elements in the Periodic Table of Elements The number does not speak of large-scale structures ---- partons without scalability real quantum chromodynamic chemistry. Here it is similar to consider particles such as protons and neutrons as "equals", but in the representation of the structure, similar to the phenomenon of regimes and political parties, the coding role of the leading core and other members is different.

Introducing Casimir's flat counterforce to the nucleus, if the proton number is not a simple strong force system, but has many ups and downs, it is possible to devise the scientific equivalent of the Casimir's flat counterforce "quantum color-motion geometry" contained in the "carbon nucleus". The "details" are designed.

Because the oxygen nucleus of the 8 protons constitute the cube, the formation of 3 pairs of Casimir plate effect, this "quantum color dynamics geometry" effect is any other element in the periodic table of the nucleus of the atom, the number of protons contained in the "natural number" cannot be compared. The reasoning behind this is that to form the simplest plane you need 3 or 4 points, i.e. 3 points to form a triangle plane and 4 points to form a square plane. The Casimir effect requires two parallel planes, and a triangular plane requires 6 points, which is similar to a carbon base.

A square flat plate requires 8 points, which is similar to oxygen. If we consider these "points" as the "number of protons", 6 protons are less than 8 protons, but comparing the quantum Casimir force effect, the cube of 8 proton points is up and down, left and right, and front and back, which can be parallelized to form 3 pairs of Casimir plate effect, i.e., it is irrespective of orientation. Constructing a pair and 3 pairs of Casimir plate pairs effect of quantum color dynamic geometry "game" and quantum color dynamic chemical generation element "game", this hierarchical "Casimir Periodic Table This hierarchical "periodic table of Casimir elements" membrane world gives rise to quantum color-dynamic chemical energizers such as oxygen nuclei, carbon nuclei, and their variants, which are similar to the Zhang-Qian dihedral.

I.e. "6" counts as a "good prime" and "8" is a better "good prime" ---- similar to the square of The 8 vertices are the closest and most parsimonious empirical and a priori images of the up-down, left-right, and front-back pairs of Casimir effect flat panels in both the local and global domains. But for all natural numbers, including even all real and complex numbers, there are infinitely many, and since there is only one "8", the probability of 8 is one in infinity in nature, i.e., no such miracle can happen again.

This is the quantum information principle of decrypting the protons in the nucleus of the atom for the weak force energy research according to the serialization of the Casimir plate-pair effect: the nucleus of the atom is not a simple strong force system, but has a lot of virtual quantum undulation in the connection; this is in the internal space of the nucleus, such as then being subjected to the "resonance" of the weak force energy reaction put in by the outside world, it will be a situation of a much larger scale than the atomic nucleus weak force effect. This is a much larger scale than the weak force effect of the nucleus, and it is possible to measure the undulations of such weak force energy reactions by means of isotope mass spectrometry and rigorous chromatography-mass spectrometry detection.

The proton string square system composed of multiple "good proton numbers", say "6" and "8", writes "6" and "8" arrays of information points (similar to say superconducting "preferences"), and the resulting write-erase and re-write of information points are the basis for new functional materials and hidden energy sources. The information dot matrix of "8" (similar to the "preference" of superconductivity), and the writing-erasing and re-writing of the information dots are the treasure trove of new functional materials and implicit energy sources, and the architectural, thermodynamic, and kinetic effects of their proton-ordered assemblies are to be further revealed. .

b, good proton number theory lead apatite plus copper experiment

In 1869 Mendeleev proposed the minimalist Mendeleev Periodic Table of Elements, 154 years have triggered the combination of topological physics to quantum chromodynamics, revealing that science + statistics = quantum ups and downs + the Casimir plate-pair effect = smartphones + blade base stations =

artificial intelligence + statistics, has involved from the principles of atomic bombs, hydrogen bombs such as nuclear radiation, to the exploration of superconductors involved in the room temperature atmospheric pressure. The phenomenon of the quantum Casimir effect, which is to be linked, was discovered and proposed by the Dutch physicist Casimir in 1948. It was subsequently detected by many scientists as well, but quantum chromodynamics of quarks, gluons and the like were not yet available when Casimir discovered the Casimir force.

The explorations of scientists such as Casimir were still only above the level of the physics of the atomic nucleus and the electromagnetic field, and the idea at that time was only that of a force originating in the electromagnetic field of the quantum vacuum fluctuations. The strange pulling or pushing force (similar to the "contraction" of superconductivity) that exists between two very close objects due to the fluctuation of quantum forces in the vacuum state is known as the Casimir effect. However, at this time, the Casimir effect is a quantum force fluctuation of the quantum of the origin, people still mainly regarded as "real particles". It can be extrapolated to the water molecules of liquids such as ocean waves, air molecules of wind flow, etc., which can also produce the Casimir effect.

But mathematically, "number" has a positive, negative; virtual, real; zero and other five kinds of difference, contact with the real particles and its negative particles, in this Casimir effect vacuum, two parallel flat metal plate between the resulting attraction pressure, and Newton, Einstein found gravity, its deep-seated physical principles are different. Deepening this connection in terms of basic mathematical principles of reasoning will not be a clear idea until today's examination of Einstein's general theory of relativity and quantum chromodynamics, traced below the level of the physics of the atomic nucleus and the electromagnetic field, where issues of quantum gravity and dark energy, dark matter, dark information, and string theory emerge.

And the "good proton number" said first originated from the trial solution with Prof. Jiao Kefang about "crustal elements nuclide decay conjecture" ---- On July 28, 2009, Prof. Jiao Kefang, a researcher at the Institute of Pharmacology and Toxicology of the Chinese Academy of Military Medical Sciences, proposed that crustal elements Nuclide decay conjecture, said he "found the formation law of the top 12 elements with the largest distribution in the crustal elements ---- The order of elemental content in the earth's crust: Oxygen (45.2%), Silicon (27.2%), Aluminum (8%), Iron (5.8%), Calcium (5.06%), Magnesium (2.77%), Sodium (2.32%), Potassium (1.68%), Titanium (0.68%), Titanium (0.68%), and Nitrogen (0.68%), and the Nuclei of the Earth's crust (0.68%), are the most distributed in the earth's crust. 0.68%), hydrogen (0.14%), manganese (0.10%), and phosphorus (0.10%) Why are these elements most abundant in the Earth's crust?

In particular, among them, the even-even nuclide 8 Oxygen 16 (8 protons, 8 neutrons) has the highest content, followed by the even-even nuclides 14 Silicon 28, 12 Magnesium 24, 26 Iron 56, 20 Calcium 40, and 22 Titanium 46 are also even-even nuclides, which is understandable. However, the odd-even nuclide 13 aluminum 27 has the third highest content; 11 sodium 23, 15 phosphorus 31, 19 potassium 39 and 25 manganese 55 are all odd-even nuclides, why?

If you add the hydrogen nuclides, there is a 50/50 split between even and odd nuclides. Yet none of them are odd-even nuclides, e.g., 3 lithium 6, 5 boron 10, 7 nitrogen 14, and so on. Why are most even-odd and odd-odd nuclides naturally low in relative abundance, e.g., 8 Oxygen 17 (0.038%), with natural abundance in parentheses, 14 Silicon 29 (4.67%), 12 Magnesium 25 (10%), 20 Calcium 43 (0.135%), 26 Iron 57 (2.1%). Why are all the nuclides with 100% natural relative abundance odd-even nuclides? For example, 11 sodium 23, 13 aluminum 27, 15 phosphorus 31, and 25 manganese 55. The apparently irregular composition of the elements of the earth's crust actually has a secret inner connection, as if there is a black hand that has been manipulating the formation of the elements of the earth's crust".

In response, Prof. Jiao Kefang sought our answer. In our reply to him, we firstly pointed out that Prof. Jiao Kefang said that there were some discrepancies in the ordering of the first 12 elements in different sources. Secondly, the ordering of manganese (0.10%) and phosphorus (0.10%) provided by Prof. Jiao, the abundance of which is the same as that of 0.10%, is sequential, which indicates that the data are not accurate. The next elements of the order, there may be greater discrepancies, which shows that the so-called "even-even nuclides and odd-even nuclides half and half, none of the odd odd nuclides," the law, not necessarily can be reasoned down. The reason:

1) The abundance of chemical elements in the Earth's crust, we searched according to Baidu Wikipedia, including five different sources of information to get the results, which indicate that the number of estimates will change with the different sources of information and estimation methods, so can only be used as a general reference. One of them, in a slightly different order from that provided by Prof. Jiao Kefang, is: 1) Oxygen (46.60%); 2) Silicon (27.72%); 3) Aluminum (8.13%); 4) Iron (5.00%); 5) Calcium (3.63%); 6) Sodium (2.83%); 7) Potassium (2.59%); 8) Magnesium (2.09%); 9) Titanium (0.44%); 10) Hydrogen (0.14%): 11) manganese (0.12%); 12) phosphorus (0.10%).

(2) This ordering provides the difference in abundance between manganese and phosphorus. Secondly, although the ordering of sodium, potassium

and magnesium is different from that of Prof. Jiao Kefang, the top 12 elements are all the same. What factors affect the formation pattern of the top 12 elements, which are the most distributed elements in the earth's crust? As we all know, the famous British mathematician and astronomer Hoyle, solved the problem of the cosmic origin of the chemical elements, is should be awarded the Nobel Prize for science. 1954 he has proved that from helium to carbon these light elements can be produced in the temperature of 100 million open in the red giant star; 1957 he and Mr. and Mrs. Burbidge, Fowler, the four put forward the famous theory of synthesis of the elements of the B2FH; in 1967 Hoyle, Fowler, and the Wagoner collaborated to explain the origin of all the other light elements using the Big Bang theory. However, the 1983 Nobel Prize in Science was awarded only to Fowler.

3) The papers we published in 1996, such as "Formulas for Calculating the Mass Spectra of the Elemental Particles of the Matter Family," partially support Hoyle's hypothesis that the Big Bang theory explains the origin of the light elements. Because the formula of the group can calculate the mass of 61 kinds of elementary particles of the matter family ---- i.e. 48 kinds of fermions and 13 kinds of canonical bosons one by one, which is exactly based on the big tear model of space-time of the Big Bang which is similar to the tearing of the membrane. From Hoyle to the mass spectrum of elementary particles formula can illustrate the origin of the light elements, hydrogen is the simplest light element, but also the periodic table of all the elements in the atom of the lightest element, as is the Big Bang after the first origin of the elements, hydrogen has become the crust of the elements of the most widely distributed in the formation of the first 12 elements of the abundance of the background of the elements, hydrogen and the sort of the next after hydrogen, included in the distribution of the most widely distributed in the elements of the Earth's crust The search for the law of element formation is no longer meaningful. Therefore, if the first 12 elements mentioned by Prof. Jiao are deleted from hydrogen, the search for the remaining 9 elements such as oxygen, silicon, aluminum, iron, calcium, magnesium, sodium, potassium, titanium or oxygen, silicon, aluminum, iron, calcium, sodium, potassium, magnesium, titanium will not be affected.

(4) As early as January 4 and 5, 2009 "Quantum Information and Health Shanghai Forum" and around this time, we published several reports on the principles of the hypothesis of a large earthquake "proposed Large Hadron Collider", and does not deny the extrusion of the crustal plate fracture zones, We do not deny that the macroscopic mechanisms of crustal plate rupture zones such as extrusion, collision, misalignment, slippage, etc., similar to the mechanism of volcanic eruption, are objective and decisive, but this is also linked to its microscopic mechanisms and their probabilities. ---- The scale-free nature of small-scale structures is real, and the vacuum Casimir effect and energy quantum tunneling effect of partial quanta are precisely the growth poles of the quantum chromatic dynamics of the chemical industry. The "energy" borrowed by the quantum tunneling effect is also similar to the virtual particle, which is also generated by the uncertainty principle and the principle of conservation of energy, and the return is also similar to the annihilation of the positive and negative virtual particle pairs generated by the "decay". It seems that in quantum chromodynamic chemistry, this is a modeling of the Cassimy effect and energy tunneling effect involving partons, as a model of the principle of conservation of energy and the principle of uncertainty. The most basic experiment is the vacuum Casimir effect, and the closest and most parsimonious number for the vacuum Casimir effect is "8". Is this a "good proton number"?

(5) "good proton number" led to the quantum color-motion geometry "game", Jiao Kefang crustal elements nuclide decay conjecture to the climax ---- that is, the crustal elements in the distribution of the largest number of the first nine elements of the formation of the law, is due to billions of years since the crust of the earth's occurrence of the The formation pattern of the top 9 most distributed elements in the earth's crust is due to the chemical "fine-tuning" of the quantum chromatic motion of the earth's crust over billions of years due to the occurrence of billions of earthquakes and volcanic eruptions. This can be expressed qualitatively and quantitatively through rigorous calculations and analysis of the geometric hierarchical images of quantum chromatic dynamics, and the laws are obvious.

For example, an oxidation reaction is a reaction between a non-metallic element that has an oxygen-like atom and an element that has a metal-like atom, in which the non-metallic element takes electrons away from the metallic element in a process called "oxidation". In chemistry, "combustion" refers to a strong oxidation reaction, not a reaction without "oxygen". Therefore, the reaction between sodium and chlorine is an oxidation reaction in chemistry. In the case of a five sided cube connected by a triangle of six proton points, only one pair of flat plates is parallel.

The participation of such quantum chromo-chemical energizers in the "game" of quantum fluctuations in the nucleus enhances the quantum Casimir force effect on the proton structure. As a result of this geometrical structure, there is a difference between endogenous and exogenous quantum chromodynamic chemistry. Similarly, the 14 protons in the atom of the element "silicon" can form a proton assemblage that looks like a five-sided cube with a carbon base and an ortho-cube with an oxygen base,

respectively. In addition, not carbon and oxygen is called oxidation reaction, there are such as hydrogen and chlorine reaction, the generation of hydrochloric acid, which is also called oxidation reaction. The atomic bomb explosion is the mass-energy principle, does not belong to the chemical process of electron movement, can not be explained by the common oxidation and combustion.

(6) from the mathematical deduction of the periodic table of chemical elements, from Galileo's "inclined plane" contact Hawking's "interface", and then to Casimir's "plane", using mathematical descriptions: One point does not constitute a plane, two points constitute a straight line, three points can constitute a triangle "plane", six points can constitute a pair of parallel "planes", before contacting the "Casimir plate effect ". That is, each "point" as a chemical element nucleus of a proton, six points correspond to the "carbon", has entered the periodic table. Is "6" also a "good proton number"?

But compared with "8", which is four points forming a quadrilateral "plane", "8" points can form a cube, which is three pairs of parallel "planes"; "8" points are eight protons, corresponding to the "oxygen element". "The "8" points are 8 protons, corresponding to the "oxygen element". "Oxygen" is the most active chemical element on earth than "carbon", and among all the numbers, only "8" points can form three pairs of parallel planes at the same time. Besides, the mathematical connection of "quantum undulation effect", combined with "Casimir's plate effect", creates a condensed string physics similar to the mathematical 0 quantum open and close entangled chips, the periodic table of elements can be formed. That is, here quantum "0", similar to Laozi's "something from nothing" math such as 0 + 0 = 0; 0 + 0 + ... + 0 = 0. Secondly, similar to "quantum entanglement "1 + (-1) = 0 belongs to the principle of arithmetic and algebraic operations related to the infinite number of natural numbers, real numbers, imaginary numbers, complex numbers, such as positive and negative pairs of addition calculations, involving quantum ups and downs, vacuum ups and downs, and other similar to the Casimir effect contraction effect of the detection of the phenomenon of Hawking's black hole radiation, similar to the phenomenon of imaginary energy effect, is the counterpart of the observation.

7) i.e. "6" counts as a "good prime number" and "8" is a better "good prime number" ---- similarly The 8 vertices of a square are the closest and most parsimonious empirical and a priori images of the up-down, left-right, and front-back pairs of Casimir effect flat panels in both the local and global domains. But for all natural numbers, including even all real and complex numbers, there are infinitely many, and since there is only one "8", the probability of 8 in nature is one in infinity, i.e., no such miracle can happen again. This is the atomic nucleus of the proton, according to the Casimir plate effect of the series, for the weak force energy research to decrypt the quantum information principle: the atomic nucleus is not a simple system of strong force, but in the connection with a lot of virtual quantum ups and downs; this is in the atomic nucleus in the internal space, such as then by the outside world put into the weak force energy powder reaction of the "resonance", will be This is a situation on a much larger scale than the weak force effect of the nucleus, and it is possible to measure the undulations of this type of weak force energy reaction by means of isotope mass spectrometry and rigorous chromatography-mass spectrometry detection.

The above study says that lead apatite plus copper room temperature atmospheric pressure superconductivity a class of experiments, its lead (Pb), phosphorus (P), copper (Cu), oxygen (O), and other elements of the atomic nucleus proton number wave function on it:

Lead

(Pb-82Z): Z=(3×N)+(4×n)=(3×14)+(4×10)=82

Phosphorus

(P-15Z): Z = (3 x N) + (4 x n) = (3 x 5) + (4 x 0) = 15

Copper

(Cu-29Z): Z=(3×N)+(4×n)=(3×7)+(4×2)=29

Oxygen (O-8Z): Z=(3×N)+(4×n)=(3×0)+(4×2)=8

[9. Initial exploration of the mathematics of superconductivity]

Geometric symmetry can be understood as a motion by which a pattern or object shape can remain unchanged. Physical theories have similar symmetries, but in physical theories it is not the pattern or object shape that remains unchanged after transformation, but the mathematical form of the theory itself.

For example, the physical image is the physicist's outline understanding of the physical nature of certain phenomena or problems and their evolutionary laws of motion. The superconductivity experiment done by Onnes in 1914 was regarded as a typical three-spin image. That is, three-spin quantum numbers, body spin corresponds to temperature, surface spin corresponds to current, line spin corresponds to magnetic field. The three-spin picture was further used to recognize the unified mechanism of the lattice morphology and transition of superconducting materials from low to high temperatures and from inorganic to organic, where carrier pairs (electron pairs or hole pairs) are essentially a kind of small three-spin circle, and it is the large three-spin circle in the lattice that leads to carrier pairing. This is analogous to playing the game of flying rings, which fly out and back, with spin and throwing forces. The electron pairs actually form the small three-spin circle, and the phonons are the prime mover that creates it and throws it ---- This is the case for low-temperature superconductivity. With room temperature atmospheric

pressure superconductivity, the situation is much more complicated.

However, the three-spin picture communicates with all of them and gives a complete and natural interpretation of many superconductivity puzzles. The three-spin is image-wise a two-group Shimei structure, i.e., it contains a loop-like structure (ψ) and a spin structure (Ω):

$\Psi = \psi\Omega$ (9.1)

From the absorption experiments of electromagnetic waves proved that the electronic energy spectrum of superconductors has an energy gap, according to the BCS theory, its superconducting ground state from the Hamiltonian function, which also includes to the lead apatite plus copper experiments to solve the superconductivity said that the calculations using methods such as density-functional theory (DFT) and GGA+U.

The final equation for the superconducting energy gap, which is very similar to the BCS theory, is derived, and resistance can occur when an external magnetic field penetrates the superconductor in the form of a bundle of lines called a flux line.

Since flux lines are composed of a number of current vortices, they are often referred to as vortices. Of the three spins, vortices are line spins, so the process of figuring out how these line spins move and how they automatically align themselves under a wide variety of temperature and magnetic field conditions will be extremely important for controlling this phenomenon and maintaining the state of superconducting current flow.

In fact, scientists have found that these line spins can form some exotic new phases within room temperature, atmospheric pressure superconductors, and have had to abandon their original views and develop new hypotheses based on modern concepts of condensed matter physics.

The three-spin image is arguably the first of its kind. For example, a grid of warp and woof lines is drawn on a torus-like body, and we call these grids transposons. If the transposon is moving in a group effect, then the shape and arrangement of its grid pattern is regular. If it is a square, it can move both left and right and up and down. If it is prismatic, it cannot. Because this horizontal and vertical movement will be tip-to-tip, the two diagonal edges at the same time are subjected to pressure, can not move down neatly, only for oblique movement. This grid shape and the locking of the pendulum, the decision transposon movement is the dimensionality, which with the superconductivity does not depend very much on the superconducting thin layer of three-dimensional coupling between the two-dimensional mechanism expressed in connection.

Second, just as playing hula hoops can move up and down the body, the three-spin image also illustrates this strict two-dimensional limitation, in that for an electron pair of such small three-spin loops, in the presence of line-spinning streamers crossing the planes and at temperatures as low as T_c or below, it can also tunnel coherently from one planar plane to the other through the Josephson effect, whereas it cannot do so for a single electron.

[10. Historical review of the guidance of lk-99]

On July 22, 2023, a team of South Korean researchers submitted a paper on the arXiv platform, a preprint website,[13][14] claiming to have synthesized the world's first room-temperature atmospheric pressure superconductor.

First paper: We have successfully synthesized for the first time in the world a room-temperature superconductor (Tc over 400 K, 127 oC) operating at atmospheric pressure with the structure of modified lead apatite (LK-99). Critical temperature (Tc), zero resistivity, critical current (Ic), critical magnetic field (Hc), and Meissner effect proved the superconductivity of LK-99. The superconductivity of LK-99 originated from the tiny structural deformation caused by a slight volume shrinkage (0.48%) rather than external factors such as temperature and pressure. The shrinkage is caused by the substitution of Cu2+ for Pb2+(2) ions in the Pb(2)-phosphate insulating network and generates stress. It is simultaneously transferred to the Pb(1) of the cylindrical column, leading to the deformation of the cylindrical column interface, which results in the formation of a superconducting quantum well (SQW) at the interface. The heat capacity results show that the new model is applicable to explain the superconductivity of LK-99. The unique structure of LK-99 allows the tiny twisted structure to be maintained in the interface, which is the most important factor for LK-99 to maintain and display superconductivity at room temperature and ambient pressure.

The second thesis: a material named LK-99, a modified lead apatite crystal structure with the composition $Pb10\text{-}xCux(PO_4)_6O$ ($0.9<x<1.1$), has been synthesized using solid-state methods. The material displays the ohmic-metallic properties of Pb(6s1) above the superconducting critical temperature Tc, and the levitation phenomenon of the Meissner effect of superconductors at room temperature and atmospheric pressure below Tc. The Tc of the LK-99 sample exceeds 126.85□C (400 K). Our analysis suggests that the possible room-temperature superconductivity of this material is attributed to two main factors: first, the volume contraction due to the insulator-metal transition by replacing Pb with Cu, and second, the enhanced on-site repulsive Coulombic interactions due to the deformation of the structure of the one-dimensional (D) chain (Pb2-O1/2-Pb2 along the c-axis) as a result of superconducting condensation at Tc. We discuss the mechanism at room temperature Tc in terms of the one-dimensional BR-BCS theory.

LK-99 superconducting characteristics [13][14]:

LK-99 is made of lead apatite Slightly modified hexagonal structure, which is claimed to act as a superconductor TheThe Korea Advanced Institute of Science and Technology (KIST) and a team of Sukbae Lee (이석배, Sukbae Lee) of the Korea Advanced Institute of Science and Technology (KAIST) have studied the material. The research is currently pending replication and peer-reviewed The

The chemical composition of LK-99 is approximately Pb9Cu1(PO4)6O, with about one-quarter of the Pb2+ replaced by Cu2+ ions compared to pure lead apatite (Pb10(PO4)6O). The researchers claim that utilizing Cu2+ ions (87 picometers) to partially replace the 133 picometers of Pb2+ ions can reduce the volume of the material by 0.48%, thus creating internal stresses within the material.

It is claimed that this internal stress would be in phosphate ([PO4]3-) within Pb(I) and oxygen to produce a heterojunction quantum wells which results in a superconducting quantum well (SQW). Li Shipei et al. claimed that when using chemical vapor deposition LK-99 was applied to non-magnetic copper samples, LK-99 showed complete antimagnetic (Meissner effect).

Pure lead apatite is an insulator , but Li Shipei et al. claim that the copper-doped lead apatite forming LK-99 is a superconductor, or at higher temperatures a metal .

The LK-99 material was synthesized as follows [13][14]:

Lead(II) oxide is synthesized by combining lead(II) oxide (PbO) and lead(II) sulfate (Pb(SO4)) powders were mixed 50%/50% and then heated at 725°C (998 K; 1,337°F) for 24 hours to produce pyrrhotite.

PbO+Pb(SO4)→Pb2(SO4)O

Copper phosphide (Cu3P) is produced by converting the copper (Cu) and phosphorus (P) powders in a sealed tube at 10-3 Torr Vacuum and heated at 550°C (820 K; 1,000°F) for 48 hours to obtain the

Cu+P→Cu3P

Pyrite and phosphatized cuprous crystals were ground to powder, mixed in a 1:1 molar ratio, placed in a sealed tube under vacuum 10-3 torr, and heated to 925°C (1,198 K; 1,697°F) for 10 hours to obtain LK-99.

Pb2(SO4)O+Cu3P→Pb10-xCux(PO 4)6O+S(g)↑, where (0.9<x<1.1)

[11. Theory of superconductivity of space-time steps]

The theory of the space-time ladder reveals that the formation of electron tornadoes, or the formation of electron dissipative structures, or, to be precise, the enhancement of the electron energy gas field, is the basis of superconductivity. The electron tornado is expanding around it, which is the basis for the Meissner effect, and contracting in the center, which is the basis for the pinning force. When the energy gas field attraction is greater than the Coulomb repulsion, the electrons form Cooper pairs and release dark energy into imaginary space-time. When the dark energy increases to a certain level, the imaginary space-time allows the Kuiper pairs to be free and forms electron pairs of imaginary space-time waves that are free to fluctuate within the superconducting material, which is the basis for the zero superconducting resistance. This is similar to the hot air balloon principle, where the void space-time is the hot air and the electron pairs are the hot air balloon equipment. Conductor electrons free, easy to emit dark energy, resulting in a lack of dark energy, not easy to form the electron pair of virtual space-time waves, so the superconducting critical temperature is very low, this is because the conductor's emissivity coefficient is too high. Insulator electrons are not easy to emit dark energy, easy to form electron-to-void space-time waves, so the superconducting critical temperature is slightly high, which is because the emissivity coefficient of the insulator is low. The solution of the gas-spacetime wave equation, the coherence factor, is an important factor for superconductivity. Also, the conditions under which tornadoes form are an important basis for superconductivity. Finally, it is emphasized that the coherence coefficient and the prevention of dark energy emanation are the two most important elements for the preparation of superconducting materials. [15]

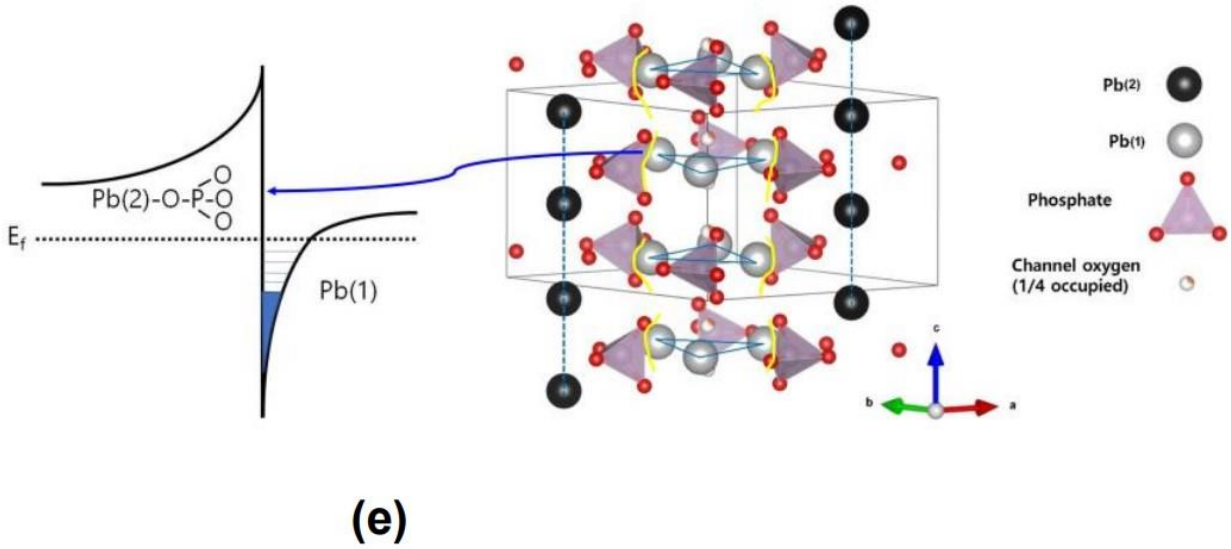
[12. Interpretation of LK-99 superconductors by the theory of space-time step superconductivity]

1. LK-99 superconductors form electron pair-void space-time waves [15]: free motion

The space-time ladder theory reveals that dark matter is the root of the universe, and dark matter polarization produces contracted matter and expanding dark energy.The formation mechanism of the LK-99 superconductor is the contraction of the matter structure caused by Cu2+ replacing the Pb2+(2) ions, and the contraction of the matter results in the expansion of the dark energy, and the outer layer of the LK-99 material is an insulator, so the expansion of the dark energy does not emanate, resulting in the electron and dark energy formation

Electron-pair-void space-time waves, such electron-pair-void space-time waves move freely in LK-99 superconductors, forming superconductors.

The most important superconducting mechanism: the contraction of the structure of matter induced by the substitution of Cu2+ for Pb2+(2) ions in the (e) diagram in the original article [1], which generates the corresponding quantum well and expansion of dark energy (not presented and analyzed in the original article), and the excess dark energy due to the fact that lead apatite is the insulator which is not emitted, and is composed with electrons: electron pair-void space-time waves.



(e)

Figure (e) the side-view of the cylindrical column and the predicted superconducting quantum well.

The formation of this superconductor is related to the polarization of the dark matter in the structure, which is related to the contraction of the structure of matter caused by the substitution of Cu2+ for Pb2+(2) ions. Because of the presence of dark matter, the contraction of matter inevitably produces an expansion of dark energy. This expanding dark energy pairs with electrons in insulators, forming electron pair-void space-time waves that move freely, which is the superconducting mechanism of LK-99. This explanation, which includes matter, dark matter and dark energy, is the basis of the whole superconductivity, and can explain not only one type of superconductivity, but also two types of superconductivity, as well as the superconducting phenomenon of LK-99.

All in all, the paper's explanations are all from the perspective of matter changes, jumping around the effects and implications of dark matter and dark energy in a way that can be considered relatively continuous and complete. It is just that there is a bit of a jump and a bit of a tangent from quantum wells to the generation of superconductivity, because here dark energy and electron pairs are needed to form electron-pair-void space-time waves in order to move freely and form superconductivity.

2. Calculation of the coherence factor [15].

Table 1 Coherence coefficient of material Pb_{10}-x$Cu_x(PO_4)_6O$

The material $Pb_{10}(PO_4)_6O$.	Material $X(PO_4)_6O$.	Coherence coefficient
$Pb_{10}(PO_4)_6O$.	$Cu(PO_4)_6O$.	
0.967483697	0.054767804	Coherence coefficient1（K_{CC1}）
0.942438083	0.997332284	Coherence coefficient2（K_{CC2}）
0.872049408	0.994000975	Coherence coefficient3（K_{CC3}）
0.52094034	0.976075878	Coherence coefficient4（K_{CC4}）
$Pb_9(PO_4)_6O$.	$Cu_2(PO_4)_6O$.	
0.322880405	0.457242323	Coherence coefficient1（K_{CC1}）
0.085133835	0.806144492	Coherence coefficient2（K_{CC2}）
0.791496488	0.581858916	Coherence coefficient3（K_{CC3}）

0.252933382	0.322880405	Coherence coefficient4（K_{CC4}）
Pb10$(PO_4)_6O_3$.	Ag$(PO_4)_6O_3$.	
0.999332848	0.018264058	Coherence coefficient1（K_{CC1}）
0.998814055	0.99970347	Coherence coefficient2（K_{CC2}）
0.997332284	0.999332848	Coherence coefficient3（K_{CC3}）
0.989343368	0.997332284	Coherence coefficient4（K_{CC4}）

Through Table 1 we know that this molecular formula is very rigorous, and the coherence coefficient becomes lower when lead becomes 9, and when copper becomes 2. Therefore, the production process must be rigorous, otherwise, although it has the same material, the proportion is different and the production process is different, which may lead to a big difference.

In addition, we have calculated that if more oxygen is added to form$Pb_{10}(PO_4)_6O_3$, it will have a better coherence factor, and at the same time, by replacing copper with silver, a better superconductor will emerge: $Pb_{10}Ag(PO_4)6O_3$. This is the best prediction of the theory of spacetime-step superconductivity.

3. More calculations

Table 2 Coherence coefficients of more materials

The material	The material X$(PO_4)_6O_3$	Coherence coefficient
$Pb_{10}(PO_4)_6O_3$	$Sn(PO_4)_6O_3$	
0.99933285	0.03652202	Coherence coefficient1（K_{CC1}）
0.99881406	0.99881406	Coherence coefficient2（K_{CC2}）
0.99733228	0.99733228	Coherence coefficient3（K_{CC3}）
0.98934337	0.98934337	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O_3$	Fe_2 $(PO_4)_6O_3$	
0.99933285	0.072995314661	Coherence coefficient1（K_{CC1}）
0.99881406	0.99525903389	Coherence coefficient2（K_{CC2}）
0.99733228	0.98934337	Coherence coefficient3（K_{CC3}）
0.98934337	0.95760060	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O_3$	Al_4 $(PO_4)_6O_3$	
0.99933285	0.072995314661	Coherence coefficient1（K_{CC1}）
0.99881406	0.99525903389	Coherence coefficient2（K_{CC2}）
0.99733228	0.98934337	Coherence coefficient3（K_{CC3}）
0.98934337	0.95760060	Coherence coefficient4（K_{CC4}）

Through Table 2, we know that the coherence coefficients of the materials Pb10Sn(PO4)6O_3 , Pb10Fe_2 $(PO_4)_6O_3$, Pb10Al_4 $(PO_4)6O_3$ are good. The above calculation is based on the conductivity to select, conductivity from small to large: tin < iron < aluminum < gold < copper < silver, the most conductive is silver, so, we choose: Pb10Ag(PO4)6O3 is the best superconductor. Next, we chose gold, aluminum, iron and tin to try in turn and found the above superconductors. If the experimenters want to try more, they can read the paper [3].

The reason for starting with the strongest conductivity is that the Pb10(PO4)6O3 of the superconductor provides the best shell of an insulator to ensure that the dark energy of the intrinsic electrons is not emitted, and the intrinsic conductivity is chosen to be the strongest conductivity, which is to make the conductivity easier, and the combination of the two aspects makes the best superconductor.

Suppose the above theory is not suitable for the real situation, and we respect the already available molecular structure, we can have the following calculations:

Table 3 Coherence coefficients of existing materials plus different metals

The material $Pb_{10}(PO_4)_6O$.	Material X(PO4)6O.	coherence factor
$Pb_{10}(PO_4)_6O$.	$Cu(PO_4)_6O$.	
0.967483697	0.054767804	Coherence coefficient1（K_{CC1}）
0.942438083	0.997332284	Coherence coefficient2（K_{CC2}）
0.872049408	0.994000975	Coherence coefficient3（K_{CC3}）
0.52094034	0.976075878	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O$.	$Fe(PO_4)_6O$.	
0.967483697	0.10937120838	Coherence coefficient1（K_{CC1}）
0.942438083	0.98934336808	Coherence coefficient2（K_{CC2}）
0.872049408	0.97607587756	Coherence coefficient3（K_{CC3}）
0.52094034	0.90544823749	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O$.	$Ni(PO_4)_6O$.	
0.967483697	0.072995314661	Coherence coefficient1（K_{CC1}）
0.942438083	0.99525903389	Coherence coefficient2（K_{CC2}）
0.872049408	0.98934336808	Coherence coefficient3（K_{CC3}）
0.52094034	0.95760059991	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O$.	$Zn(PO_4)_6O$..	
0.967483697	0.036522023058	Coherence coefficient1（K_{CC1}）
0.942438083	0.99881405524	Coherence coefficient2（K_{CC2}）
0.872049408	0.99733228366	Coherence coefficient3（K_{CC3}）
0.52094034	0.98934336808	Coherence coefficient4（K_{CC4}）
$Pb_{10}(PO_4)_6O$.	$Ge(PO_4)_6O$.	
0.967483697	1.8369095307E-16	Coherence coefficient1（K_{CC1}）
0.942438083	1	Coherence coefficient2（K_{CC2}）
0.872049408	1	Coherence coefficient3（K_{CC3}）
0.52094034	1	Coherence coefficient4（K_{CC4}）

From the calculations in Table 3, we know that $Pb_{10}Fe(PO_4)_6O$, $Pb_{10}Ni(PO_4)_6O$,$Pb_{10}Zn(PO_4)_6O$, and $Pb_{10}Ge(PO_4)_6O$ are also good superconductors, which means that within the insulator $Pb10(PO_4)_6O$, one can try to dope Fe, Ni, Zn, and Ge in addition to Cu.

[13. Conclusion]

The exploration of superconducting ring current flow mapping in both directions similar to room temperature atmospheric pressure bio-superconductivity was reported by Quantum Physics Research in 2000, where two groups of scientists in the US and the Netherlands, using superconducting coils, demonstrated that current in a ring of superconducting wires could flow in both directions at the same time. This also exists in organisms where bioelectric currents are reflected. This is a typical macroscopic quantum three-spin phenomenon, rather than a similar inductive current or reaction force principle. The reasoning is that when a ring-like body is tri-spinning, the markings on it cannot move in both positive and negative directions at the same time along the face-spin, but because of the body-spin, the original motion in the positive direction is flipped over, and the markings move in the opposite direction.

And because the face and body spins are done in a very short time, the measurement is difficult to distinguish between them, and what is measured can only be the synthesis of 50% probability of each of them, so the marking similarly appears to be able to move in

both directions at the same time, and without entanglement. This situation is only necessary for superconducting conditions to be readily apparent as pure quantum triple spins; the two-way flow of the current shown in the superconducting wire loop is also a manifestation of the macroscopic quantum phenomenon of this very principle, i.e., it is the probability of electron triple spins in the superconducting clusters that allows the current to appear to be able to flow in both directions at the same time. This implies the existence of two different iterative states with unequal energies (body spins versus surface spins), whereas an oscillation can be observed.

The demonstration of this oscillatory phenomenon is considered a landmark in quantum mechanical experimentation.

Although the superconductivity of LK-99 has not yet been peer verified and reproduced, the theory of space-time step superconductivity, has demonstrated that its coherence factor is excellent. Not only that, the space-time step superconductivity theory also predicts that Pb10Ag(PO4)6O3 is a better superconductor than Pb10Cu(PO4)6O. If the verification is successful, not only do we get a better superconductor, but we also verify that the theory of space-time step superconductivity is the correct theory.

References

[1] Zhaoxin Ye， et al, Reflections on the mechanism of high-temperature physical superconductivity and biological superconductivity, Journal of Submerged Science, No. 6, 1987;

[2] Zhaoxin Ye, Physical element analysis from elementary particles to high-temperature superconductivity, Journal of Yanbian University (since), No. 1, 1989;

[3] Zhaoxin Ye, Some thoughts on the mechanism of superconductivity, Yuzhou University Journal (since), No. 4, 1994;

[4] Zhaoxin Ye, Chinese Qigong Thinking, Yanbian University Press, May 1990

[5] Wang Dekui, A preliminary study of the three-spin theory, Sichuan Science and Technology Press, May 2002

[6] Shaofeng Kong and Dekui Wang, Seeking Balance Theory ---- Pongalai Conjecture Applications, Sichuan Science and Technology Publishing House, September 2007

[7] Wang Dekui, Interpretation of A Brief History of Time, Tianjin Ancient Books Publishing House, Sept. 2003

[8] Wang Dekui, Lin Yibin, Sun Shuangxi, Multi-body Nature Knocking in Traditional Chinese Medicine, Exclusive Publishing House, Jan. 2020

[9] Dekui Wang, Jianhua Gou et al, Superconducting quantum information technology mechanisms and weak force applications ---- decrypting triple-spin theories (2), AcademArena,November 25,2011;

[10] Udamin, A first look at the quantum chromodynamic chemistry of proton spacetime elements ---- Holographic Cross-Explorations in Natural and Social Sciences (3), Academia Arena, May 25,2022;

[11] Jin Qian, Quantum Chromodynamic Chemistry of Heavy Elements ---- Explorations in the Holographic Intersection of Natural and Social Sciences (1), Academ Arena, June 25,2022;

[12] Dekui Wang, Spin curves over all elementary particles mass point proof ---- method of splitting complex curves into easy to understand and calculate elementary curves, Jinlang Academic Publishing House, April 2023

[13] Sukbae Lee, Ji-Hoon Kim, Young-Wan Kwon. The First Room-Temperature Ambient-Pressure Superconductor. https://arxiv.org/abs/2307.12008

[14] Sukbae Lee, Jihoon Kim, Hyun-Tak Kim, SungyeonIm, SooMin An, Keun Ho Auh.Superconductor Pb10-xCux(PO4)6O showing levitation at room temperature and atmospheric pressure and mechanism. https://arxiv.org/abs/2307.12037

[15] Binggong Chang. The Formation of the Electronic Tornado is the Basis of Superconductivity. https://journals.bilpubgroup.com/index.php/jcsr/article/view/2780

8/22/2023