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The Ulianov Atomic Model

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ABSTRACT

The Ulianov Atomic Model (UAM) presents a revolutionary approach to understanding atomic structures and interactions, diverging significantly from traditional models reliant on W and Z bosons and strong and weak nuclear forces. This paper explores the UAM, which replaces these forces with the Strong Gravitational Contact Force (SGCF) and utilizes the true shapes of proton and electron membranes to provide a more profound understanding of atomic behavior. In the Ulianov Atomic Model, atomic nucleons are modeled by Kepler Ulianov Proton Trees (KUPT), and electrons follow a Ulianov Electron Distribution (UED). By examining the UAM, we gain insights into the formation of hydrogen and helium atoms, the stability of nucleons, and the potential applications of this model in nuclear reactors and the creation of room-temperature superconductors.

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Introduction

The Ulianov Atomic Model (UAM) is part of a larger framework called Ulianov Theory, which also links and extends models presented in two renowned papers: one by Albert Einstein and another by Peter Higgs [1-2]. Dr. Ulianov's article "A Corpuscular Theory of Gravitation, the Particle Problem in the General Theory of Relativity and Broken Symmetries and the Masses of Gauge Bosons" should be read as a basis to understand this paper [3].

The UAM provides a novel perspective on atomic structures and interactions, offering an alternative to the standard models that rely on W and Z bosons and strong and weak nuclear forces. This model is based on the Ulianov String Theory (UST) which introduces the concept of the Strong Gravitational Contact Force (SGCF) and utilizes the true shapes of proton and electron membranes [4,5]. In the Ulianov Atomic Model, atomic nucleons are modeled by Kepler Ulianov Proton Trees (KUPT) and electrons follow a Ulianov Electron Distribution (UED) [6,7].

Through this approach, the UAM offers a more detailed and accurate depiction of atomic behavior, including the formation of hydrogen and helium atoms, the stability of nucleons, and the potential for new technological applications such as nuclear reactors and room-temperature superconductors.

Ulianov String Theory

The Ulianov Theory introduces a new string theory, called the UST (Ulianov String Theory) [4]. The UST is based on a complex and digital time definition ($s = t + jq$) where the real time t is defined as an integer number of Planck time (t_p) and the imaginary time q has a fixed number of "process steps" equal to N_U (the Ulianov number) that defines an integer number of the Ulianov time (t_U).

In this framework, an Einstein-Rosen bridge can be used to define one Ulianov wormhole (UWH) that moves in imaginary time, jumping a Planck length distance at each new Ulianov imaginary time. In the UWH path, it can rotate in space and time and can also change its value of mass and electric charge. For an observer who cannot "see" the imaginary time (such as human beings), the imaginary time is collapsed, transforming the UWH from a 5D point-like particle into a 4D Ulianov String composed of N_U copies of the same UWH. In this way, the Ulianov String is like a pearl necklace where each pearl has the diameter of a Planck length and can assume positive and negative values of mass and electrical charge.

The UST model can define all particles observed in our universe (including leptons, baryons, quarks, and photons), which are formed by combinations of certain types of UWH that define strings analogous to very long "colored pearl necklaces." These strings can be wrapped in 1D, 2D, 3D, and 4D membranes that can assume various geometric shapes.

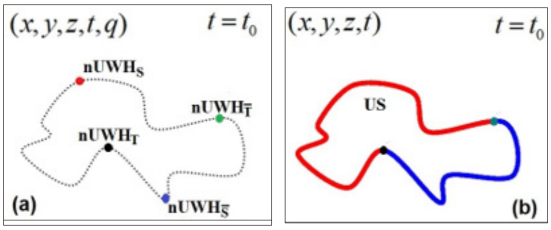

Figure 1: The base of Ulianov String Theory: The collapse of imaginary time transforms one Ulianov Wormhole into an Ulianov String. a) The Ulianov nano wormhole (uUWH) travels at imaginary light speed, changing its type on the path. b) Ulianov String (US) generated by the collapse of imaginary time.

The UST Electron Model

In the Ulianov String Theory (UST), leptons are modeled in different configurations as presented in Figure (2):

- The electron is a spherical shell with a Planck length thickness and mass concentrated at the North Pole in a small circle, rotating around its axis at light speed.

- The electron can also assume the shape of a hemispherical cap, with a Planck length thickness and mass distributed along the equatorial ring, rotating at light speed.
- The electron muon is a thicker shell with greater mass than the electron, concentrated in a small cylinder at the North Pole, rotating around its axis at light speed.
- The electron tau is a solid sphere with greater mass than the electron muon, concentrated in a cylinder from the center to the North Pole, rotating around its axis at light speed.

In principle, all lepton masses have the same basic cylinder configuration with the same radius, but the mass cylinder changes its height from only one layer (in the case of the electron) to 206 layers (in the case of the muon) and 3477 layers (in the case of the tau, which is a solid sphere but with an onion-like structure).

Despite these differences, in the UST model, all leptons have the same spin. Currently, physicists believe that electrons and protons have both positive and negative spins. By defining each particle with a unique spin, we can establish an arbitrary standard, such as linking spin to charge: electrons and antiprotons have negative spin, while protons and positrons have positive spin. For the electrons and antiprotons, we can define the left-hand rule with the mass in the North Pole and all electrons with spin equal to $-\frac{1}{2}$.For protons and positrons, the right-hand rule must be applied with the mass in the South Pole and spin equal to $+\frac{1}{2}$. .

One of the biggest differences between UST and current models is that today, electrons are treated as point-like particles and described by wave functions (Schr¨odinger equation) that essentially consider the probability of finding a point-like electron in some space volume (given in C/m^3). In the Ulianov String Theory, the electron string forms a membrane with a diameter equal to the atomic electron shell size and a thickness of only one Planck length. This electron membrane is subject to various oscillations and can also be described by the Schr¨odinger equation, but in this case, the electron wave function defines a real charge density, given in C/m^3.

Additionally, when the electron is expelled from the atomic electron shell in the UST model, it maintains the same spherical shape, and two free electrons can be connected by their masses, better explaining the phenomenon of superconductivity. The electron shell model can also explain why a small amount of energy can align the electrons' rotation axis (defined by the electron mass position in the electron shell's North Pole) and produce very strong magnetic fields.

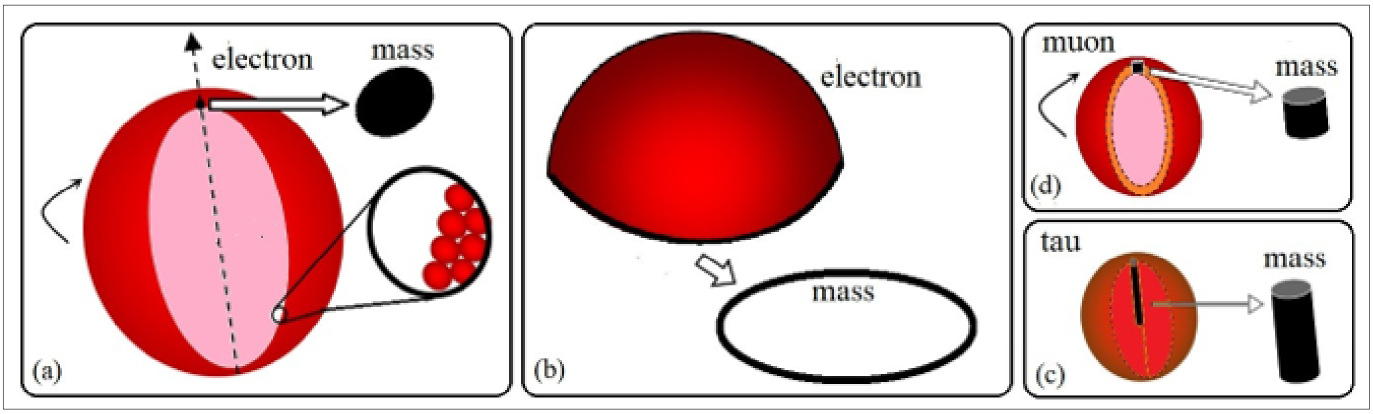

Figure 2: Representation of leptons in the Ulianov String Theory (UST): (a) An electron modeled as a spherical shell with mass concentrated at the North Pole, rotating around its axis. (b) An electron modeled as a hemispherical cap with mass distributed along the equatorial ring. (c) An electron tau particle modeled as a solid sphere with a mass forming a cylinder. (d) An electron muon modeled with a configuration similar to the electron but with a thicker shell and a mass forming a smaller cylinder than the tau mass cylinder.

The UST Proton Model

In the Ulianov String Theory, the proton is modeled as a string composed of two kinds of Ulianov nano Wormholes (nUWH $_{TS\overline{T}}$ and nUWH$_T$), generating positive mass and positive charge. As presented in Figure (3), in the UST, a proton string can be wrapped in two ways:

- A solid sphere composed of spherical layers forming an onion structure. In this model, the proton mass is represented by the nUWHT forming a circle in each onion spherical layer, so the total proton mass can be seen as a cylinder. If we consider an analogy where the proton is like a blue billiard ball, we use a drill to make a hole, radial to the center of the ball, placing a cylindrical magnet inside this hole, representing the proton mass.

- A solid half sphere (spherical cap) composed of cap spherical layers forming an onion structure. In this model, the proton mass is represented by the nUWH$_T$ forming a ring in each spherical cap layer, so the total proton mass can be seen as one circle with a Planck length thickness. If we consider an analogy where the proton is like a blue billiard ball, we cut the ball in half and paint the cut circle in black, representing the proton mass.

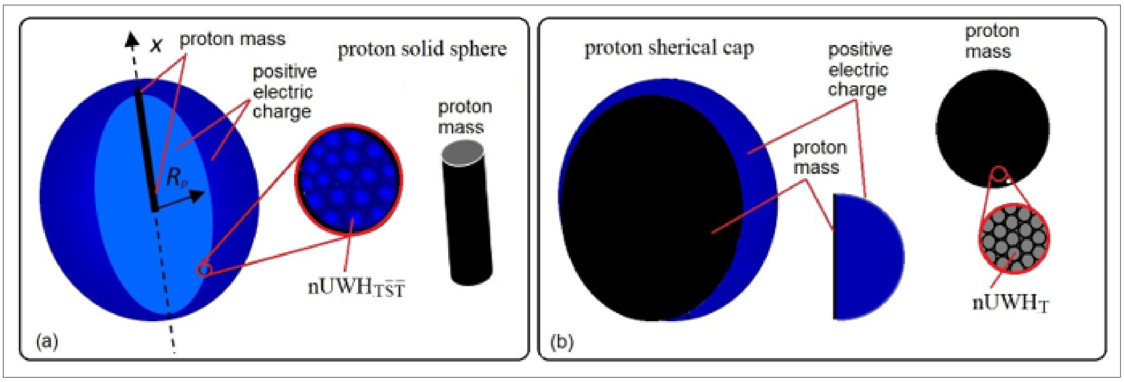

Figure 3: Proton model in the Ulianov String Theory: a) Proton forming a solid sphere composed of $nUWH_{TS\bar{T}}$ that contain electric charge, with the proton mass composed of $nUWH_T$, forming a small cylinder over the proton radius in the proton North Pole. b) Proton forming a spherical cap with its mass distributed over a disc with one Planck length thickness.

The Strong Gravitational Contact Force

In the Ulianov String Theory, the concept of the SGCF (Strong Gravitational Contact Force) is introduced to describe the interaction between protons and neutrons within atomic nuclei. Unlike the traditional understanding of the strong nuclear force, which is not connected to other forces, the SGCF is another aspect of the gravitational force that appears only when two masses come into direct contact at a distance on the order of one Planck length. As presented in Figure 4-b, the UST model shows the proton inside a helium nucleon as spherical caps that allow two protons to come together by the contact of their masses, in the same way that two slices of bread can be in contact, forming a hamburger (where a slice of cheese can represent a neutron linked directly between the protons' masses). To simplify the drawing, the neutron is not shown in this figure.

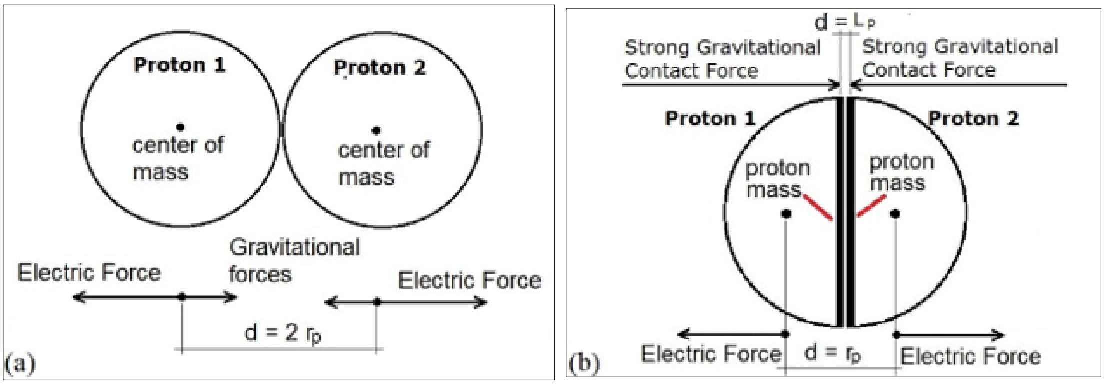

Figure 4: a) Standard representation of two protons within the helium nucleus and the forces acting between them (the neutrons are excluded to simplify the model). The mass and electric charge are distributed over all proton spheres, and the distances between masses and charges are the same. b) UST representation of two protons within the helium nucleus and the forces acting between them (the neutrons are excluded to simplify the model). The electric charge is distributed over all proton caps, and the mass is distributed over a disc. The distances between the two charges are equal to the proton radius, and the distance between the two masses is equal to the Planck length. This configuration generates a Strong Gravitational Contact Force that is two thousand times greater than the electrical repulsion force.

Considering that in this proton spherical cap model the distance between the two protons' masses (or the distance between protons and neutron masses) is only one Planck length, this model generates a Strong Gravitational Contact Force (F_{SGC}) that is two thousand times greater than the electrical repulsion force (F_E), as demonstrated by the following calculations:

$$Q2_{\text{proton}}F_E = \frac{Q^2_{\text{proton}}}{4\pi\varepsilon_0(r_p)^2} \tag{1}$$

$$F_{\text{SGC}} = \frac{(m_{\text{proton}})^2 G}{L_P^2}$$

$$F_{SGC}=714{,}794.9 \text{ N}$$

$$F_{SGC}=2{,}195.7F_E$$

In Figure (5), the UPB (Ulianov Proton Burger) structure is presented, where a disc-shaped neutron is inserted between the two protons, like a slice of cheese in a cheeseburger. The SGCF is the same because all masses are in direct contact, with the mass of each proton connecting directly to both sides of the neutron mass.

So, if the mass of the proton is not distributed uniformly within the proton's sphere and if the proton masses (or even just a fraction of these masses) can touch each other (with a distance between the masses equal to a Planck length), a Strong Gravitational Contact Force will occur, which can explain why protons are united within the atomic nucleus without having to invent a new force like the strong nuclear force.

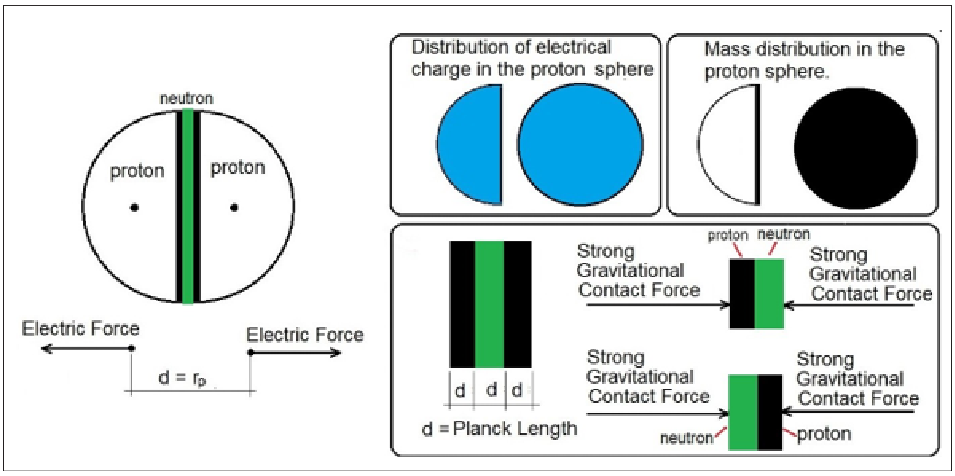

Figure 5: The helium nucleon with two protons and one neutron forming one UPB (Ulianov Proton Burger) structure.

This model can also explain why neutrons are stable inside nucleons and decay when they are expelled from the nucleon, using only gravitational and electromagnetic forces without having to invent a new force like the weak nuclear force.

Additionally, as illustrated in Figure (6), the Strong Gravitational Contact Force (SGCF) provides explanations for various electron behaviors. These include the bonding of two hydrogen atoms to form a hydrogen molecule, the formation of crystalline structures in metals, the occupancy of the same orbital by two electrons, the inertness of noble gas atoms, and the pairing of electrons in superconducting materials.

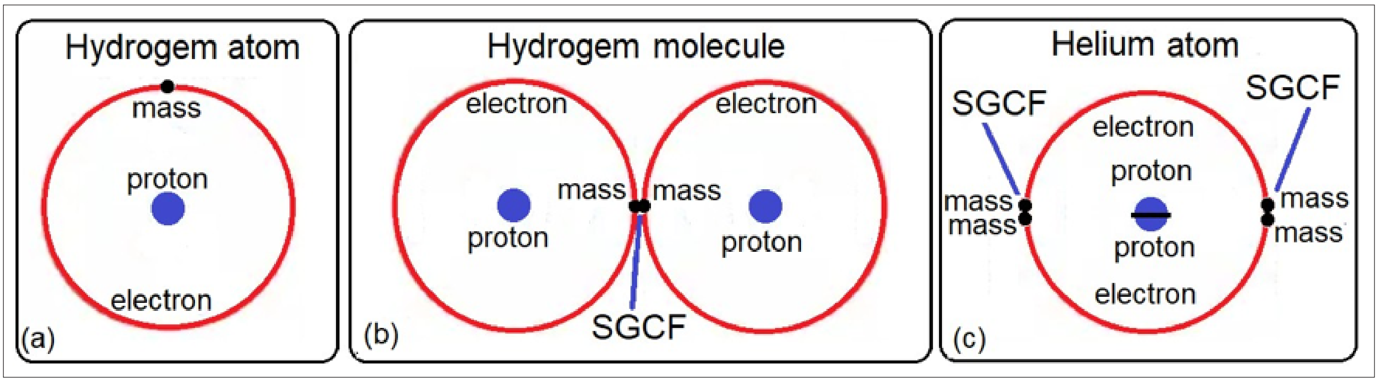

Figure 6: Electron model in the Ulianov String Theory forming a spherical shell with a single point of mass in the North Pole: a) Hydrogen atom representation in a 2D cut. b) Two hydrogen atoms forming a molecule when the electrons' masses are connected by the SGCF (Strong Gravitational Contact Force). c) Inside a Helium atom, two electrons form a spherical cap with their masses connected by the SGCF.

Ulianov Atomic Model

The Ulianov Atomic Model (UAM) is based on the description provided by the Ulianov String Theory regarding protons, electrons, and neutrons. Protons and neutrons are connected by the Strong Gravitational Contact Force (SGCF), forming tree-like structures known as Kepler Ulianov Proton Trees (KUPT), composed of up to seven layers capable of containing up to 118 protons.

In the UAM, electrons are spherical shells also connected by the SGCF and organized like nested Russian dolls, always following the organization of the protons. Thus, as atoms grow with the inclusion of a new proton-electron pair, the proton assumes a configuration in the nucleus in the form of a solid sphere or a solid spherical shell within a certain layer, and the electron mirrors the proton's configuration (spherical shell or half-shell) and occupies a layer (Russian doll level) dictated by the proton's level within the KUPT.

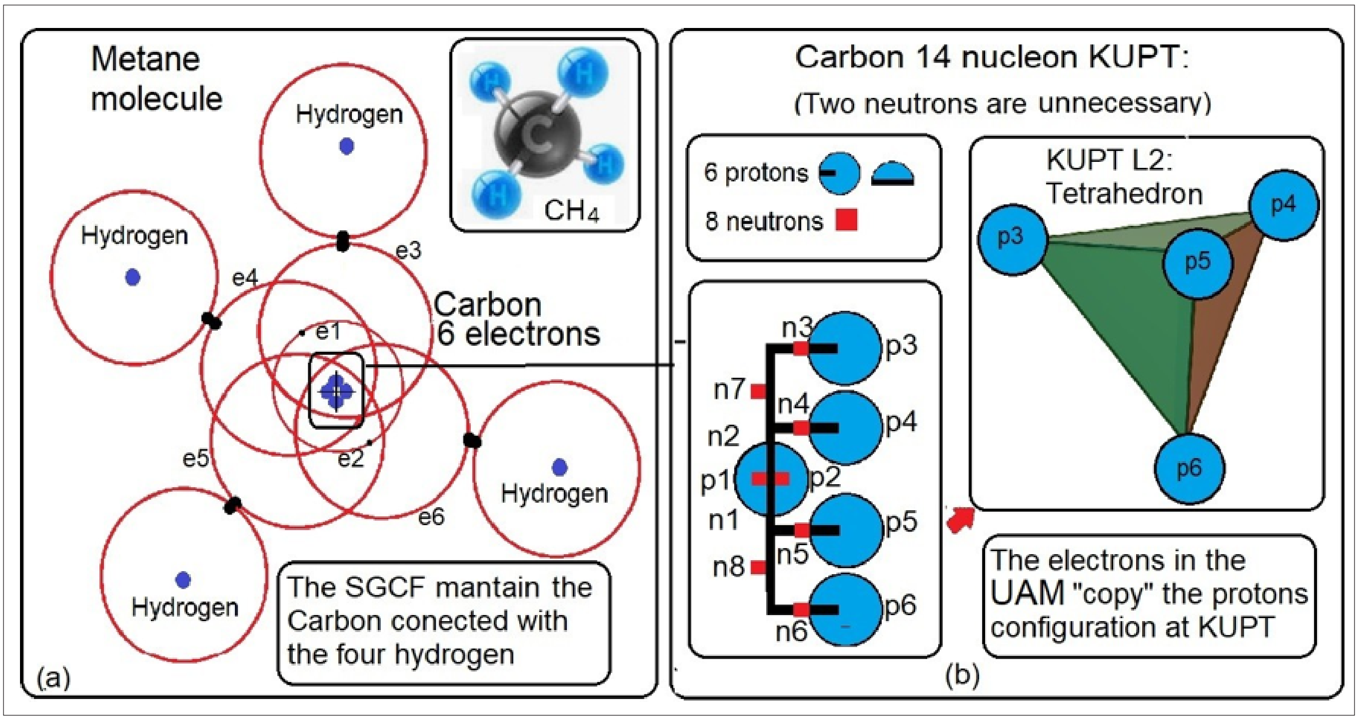

Figure 7: Ulianov Atomic Model: a) Methane molecule composed by one carbon atom and four hydrogen atoms. b) Kepler Ulianov proton three for the carbon 14 nucleon.

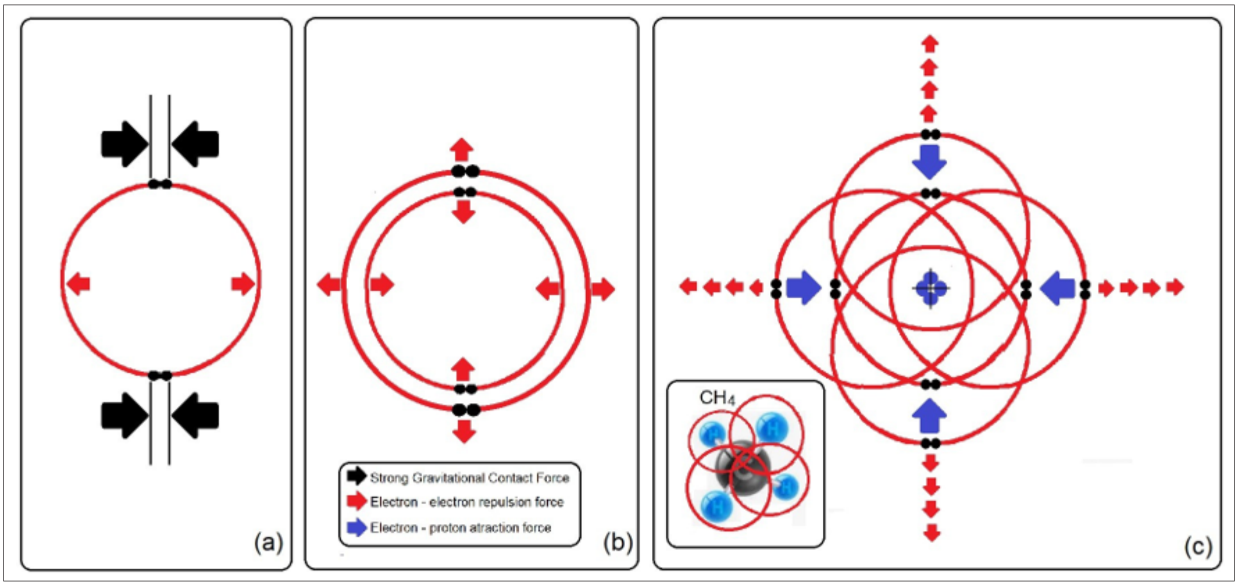

Figure 8: Ulianov Atomic Model. Forces that act on the electrons forming atomic orbitals.

This model allows for an electron distribution distinct from the Pauling distribution, yet more organized and obeying sequential energy levels of electrons that are indeed defined by the protons. The UAM resolves the proton size enigma and explains why a photon is emitted when a proton enters the electron's shell to form a hydrogen atom. Additionally, the UAM reveals that hydrogen atoms connect to form molecules because the electron masses also connect due to the SGCF. The union of the electron masses distorts spacetime, changes the size of the electron shells, and alters the radius of the proton membranes, thus explaining why photons are emitted when a hydrogen molecule is formed. The UAM also describes how four hydrogen atoms can fuse to generate a helium atom.

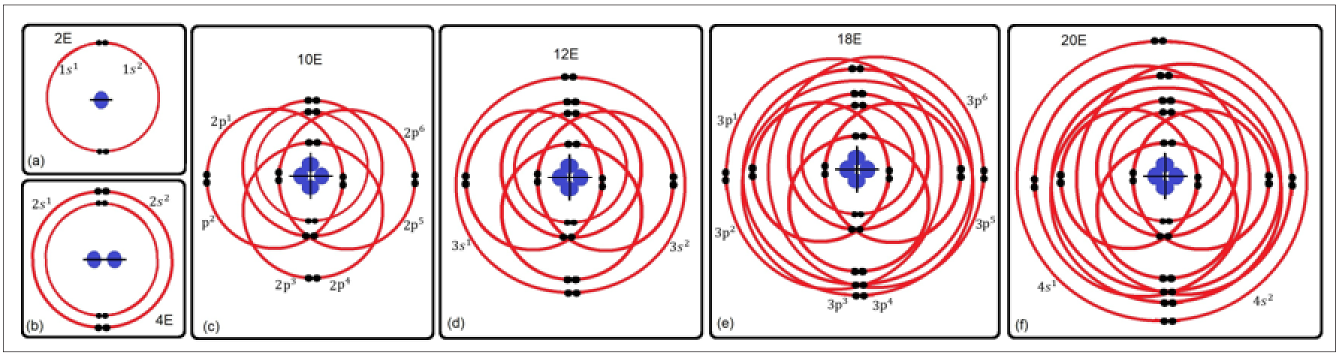

Figure 9: Ulianov Atomic Model. Formation of electron spheres, like Russian doll structures making sets of orbital levels, with two electrons connected by Strong Gravitational Contact Force in each orbital.

Resolving the Nucleon Stability Problem

The use of the Strong Gravitational Contact Force FSGC in the UST model, can also explain the need for neutrons to make stable nucleons, allowing the definition of some proton-neutron structures called UPB (Ulianov Proton Burger presented in Figure (3)-c), UPD (Ulianov Proton Dumbbell), and UPPB (Ulianov Proton Pogo-Ball), which are basic construction blocks that can be united to construct the atoms' nucleons forming a 3D structure named the KUPT (Kepler Ulianov Proton Tree) presented in Figure (10) for the Oganesson atom nucleon with 118 protons that is the maximum number of protons capacity of the KUPT structure and by coincidence is the maximum number of protons in a known element [6]. Also by coincidence, each full layer of the KUPT generates one noble gas atom: Helium, Neon, Argon, Krypton, Xenon, Radon, and Oganesson.

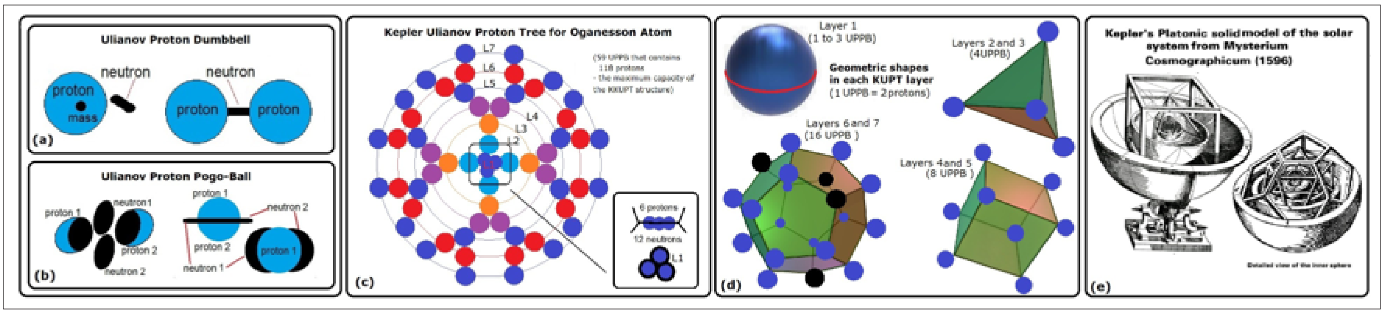

Figure 10: Proton model in the Ulianov String Theory: a) Ulianov Proton Dumbbell. b) Ulianov Proton Pogo-Ball. c) Kepler Ulianov Proton Tree for Oganesson Atom, the colors were used only to facilitate the layers visualization. d) 3D shapes of the KUPT, each blue sphere represents one UPPB that contains two protons, the geometric figures only help to define each UPPB in a 3D space. e) Kepler's second model for the orbit of planets in the solar system, the platonic solid organization proposed by Kepler is the same observed in the KUPT layers: Sphere, tetrahedron, cube, and dodecahedron.

Solving the Proton Size Enigma

The Proton Size Enigma refers to the discrepancy in measured proton radii when probed with electrons versus muons. Traditionally, the proton radius was determined using electron-proton scattering experiments [8]. However, measurements involving muonic hydrogen (where a muon orbits the proton instead of an electron) revealed a significantly smaller proton radius, leading to considerable debate and research to resolve this discrepancy.

The UST model, we can calculate the proton's radius from its mass:

$$r_{\text{proton}} = \frac{2h}{\pi c m_{\text{proton}}}, \qquad (3)$$

$r_{\text{proton}}=8.41236\times10^{-16}$ m

This value of rproton closely matches (within 0.07% of error) the proton radius values derived from muonic hydrogen experiments [8]. This indicates that the muonic experiments measure a standard proton radius that theoretically matches the radius obtained by Equation (3) for a proton alone in space.

The proton size enigma can be easily solved by considering the model presented in Figure (6), which shows the real form of an electron (a large spherical shell surrounding the proton) and a real form of a muon (a small spherical shell with a thick wall orbiting the proton). Since the proton is like an onion (a solid sphere composed of many layers), when it is inside an electron to form a hydrogen atom, the electron shell's negative charges attract the positive charges on the proton's surface (last onion layer) in all directions, causing the proton size to increase while the electron radius decreases.

In muonic hydrogen, the muon is also a spherical shell, but its wall thickness is almost 200 times greater than the electron wall thickness (which is only one Planck length). This means the muon radius is almost 200 times smaller than the electron radius, so the proton normally does not fit inside the muon. Note that when a proton collides with an electron, it is analogous to throwing a small needle at a soap bubble the size of a beach ball. The needle passes through the bubble without affecting it and comes out the other side. However, when the proton crosses the electron membrane, it is attracted by the negative charges in all directions and will oscillate inside the shell, finding stability only at the center of the electron's spherical shell where the attraction forces are exactly equal.

In the analogy of a proton colliding with a muon, it is like a needle hitting a soap bubble the size of a pea. It is much more difficult to hit the pea, and even if the needle enters it, there is not enough space to oscillate until it stops. Thus, a proton cannot enter a muon as it does with an electron. In this way, in muonic hydrogen, the proton experiences only a tidal force and does not stretch. So, in the muonic hydrogen the proton size remains unchanged and so is the same radii given by equation (3).

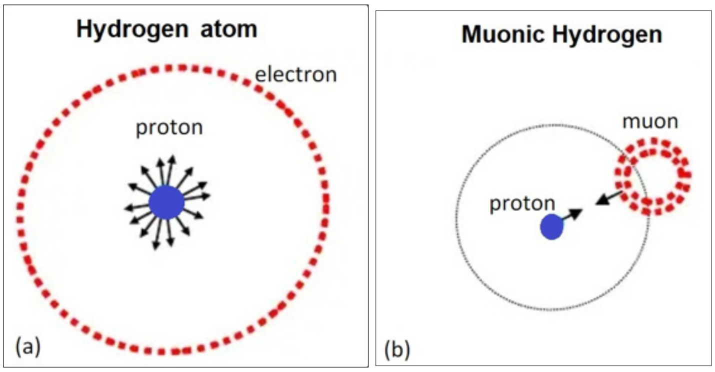

Figure 11: Explaining the proton radius variation in the hydrogen atom and muonic hydrogen: a) In the hydrogen atom (represented in a 2D cut), the electron's negative charges exist in a large spherical shell (with the size of the atom) and attract the proton sphere's positive charges in all directions, causing the proton radius to increase. b) In muonic hydrogen (represented in a 2D cut), the muon's negative charges attract the proton sphere's positive charges in only one direction, so the proton radius does not increase.

Explain why a Photon is Emitted in the Hydrogen Atom Formation

An additional result of the UST model is explaining why a photon is emitted when an electron and a proton combine to form hydrogen, as shown in Figure (12). This figure uses an analogy of the electron string represented by a red curtain (negative charge) and the proton string represented by a blue curtain (positive charge) with fixed linear size divided into multiple loops, where each loop uses a weight and a pulley. To increase the curtain's height (increase the particle's radius), the number of loops must decrease, leaving pulleys and weights (the particle's mass will decrease by expelling weights from its string). To decrease the curtain's height (decrease the particle's radius), the number of loops must increase, requiring additional weights (the particle's mass will increase). However, due to the Asimov Ulianov mass conservation law defined in the UT context, this can only be done by extracting mass from the vacuum and generating negative mass (antimatter) in the process.

In the hydrogen atom formation, when a proton goes inside an electron shell, the negative charges attract the proton sphere in all directions, causing two phenomena:

- The proton increases its radius, and the number of loops in the string needs to be reduced, liberating some weight, and so the proton expels matter.
- The electron decreases its radius, and the number of loops in the string needs to be increased, absorbing some weight from the empty space, meaning that the same amount of antimatter will be produced, and so the electron expels antimatter.

In this way, the formation of one hydrogen atom causes changes in the sizes and masses of the proton and electron, with the expulsion of matter and antimatter that are combined, resulting in the creation of a photon.

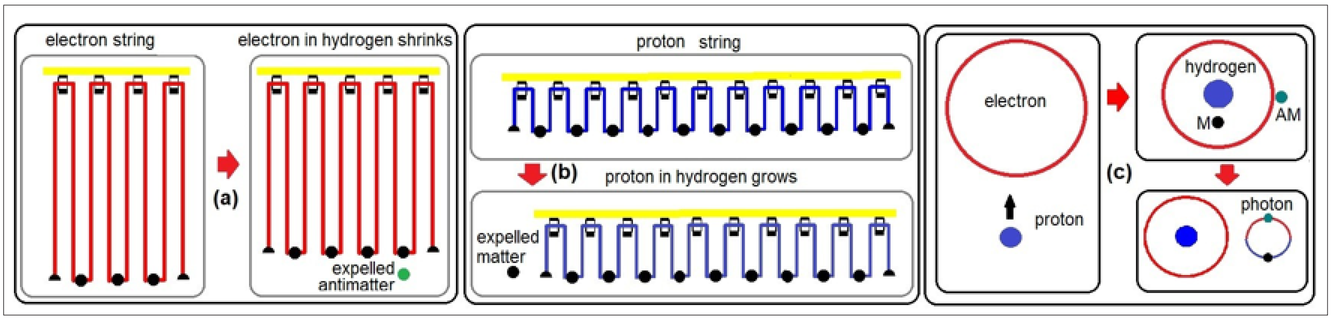

Figure 12: Analogy of electron and proton strings with curtain loops: a) Electron in hydrogen shrinks, meaning more loops in the curtain and so the electron mass grows, expelling antimatter (green circles).
b) Proton in hydrogen grows, meaning fewer loops in the curtain and so the proton expels matter (black circles). c) The formation of a hydrogen atom involves the expulsion of matter and antimatter, resulting in the creation of a photon.

Explain why Hydrogen Forms Molecules and Helium Does Not

The Ulianov Atomic Model (UAM) provides insights into why hydrogen atoms can form molecules, whereas helium atoms cannot. This can be explained by the concept of Strong Gravitational Contact Force (SGCF) and the distribution of mass within the atomic structure.

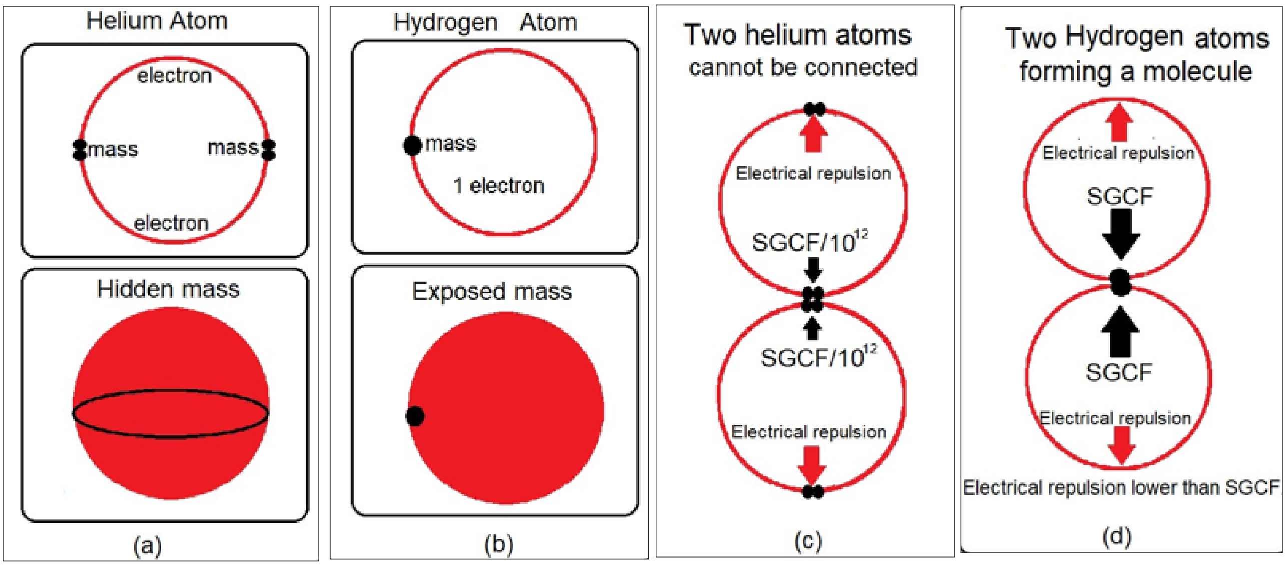

Figure 13: Ulianov Atomic Model and molecules formation. a) Helium atom with hidden mass. b) Hydrogen atom with exposed mass. c) Two helium atoms cannot be connected by the Strong Gravitational Contact Force to form a helium molecule. d) Two hydrogen atoms connected by Strong Gravitational Contact Force forming a hydrogen molecule.

Figure 13 illustrates the differences between helium and hydrogen atoms in terms of their ability to form molecules.

Helium Atom: As shown in Figure 13(a), helium atoms have their mass largely hidden within the structure of the atom. This hidden mass results in a relatively balanced electrical repulsion and a very weak SGCF that is not sufficient to overcome the electrical repulsion between two helium atoms, preventing them from forming a molecule.

Hydrogen Atom: In contrast, hydrogen atoms have their mass more exposed. This exposed mass allows for a standard SGCF value when two hydrogen atoms come into proximity, as depicted in Figure 13(d). The SGCF between the electrons is strong enough to overcome the electrical repulsion, allowing the hydrogen atoms to connect and form a stable hydrogen molecule.

The critical difference lies in mass distribution over the electron sphere. With two electrons in the same orbital, each one assumes the form of a half-spherical shell with its mass in contact and distributed in a large circle (with the atom size and only one Planck length thickness) that almost hides the masses, not allowing SGCF connections. If there is only one electron in the orbital, it assumes a complete spherical shell format with mass concentrated in a small circle that can easily connect to another electron in the same shape by an SGCF that is sufficiently strong to surpass the electrical repulsion forces, enabling the formation of molecules.

Note that the KUPT structure has seven layers, and inside three, all protons are in the solid sphere cap format, and only the protons at the end of the branches can have the shape of a solid sphere. This means that when a shell of protons is completed in the KUPT, all protons are spherical caps. As the electrons follow the configuration of the protons in the eight atoms with complete KUPT shells (the eight noble gases), all the electrons are in the shape of a spherical half-shell with all the masses hidden, and thus these atoms are all similar to the helium atom and do not form molecular bonds.

As the number of protons in the branches at the end of the tree grows with the increase in the number of levels, a maximum of [1, 4, 8, 16] protons in the shape of a solid sphere is observed, which allows the same number of electrons with exposed masses at the periphery of the atom. This explains why some metallic atoms can form 6 to 8 bonds, creating cubic and crystalline structures. In space, there are basically six bonding directions (with atoms connected by six sides of a cube or eight vertices of a cube). In larger atoms with eight more electrons with exposed masses, some of the possible bonds will never be effective.

Explain how Four Hydrogen Atoms can form One Helium Atom

A large cloud composed solely of hydrogen atoms with a diameter spanning several light-years can, over time, coalesce into a spherical shape at a central point due to gravitational forces. The hydrogen atoms at the center of the sphere will be subjected to very high pressures, leading to collisions among the hydrogen atoms (essentially collisions between electrons), which can release free protons at high velocities.

Two protons can collide in this situation and typically undergo an elastic collision and move apart. However, in some collisions, the masses of the two protons can come into contact and remain connected due to the Strong Gravitational Contact Force (SGCF). The remaining part of the proton (positive charge) has two reasons to move apart: the repulsion between positive charges and the energy from the collision itself.

In this scenario, the mass of one proton remains fixed, while the positive charges are pushed in the opposite direction. The proton unfurls, and its electric charges stop forming solid onion-like shells and start forming hollow onion-like shells until only one positive charge shell remains, matching the spherical shell radius of an electron, forming a positron. As a positron needs an antimatter particle, it absorbs antimatter from empty space and releases a matter particle. This antimatter particle, unable to form a photon due to the absence of another matter particle nearby, creates a neutrino, which has mass but no electric charge. The neutrino's mass is spread over time in a straight line, resulting in a small observed mass value in the "temporal slice" defined by an observer's "present time."

Thus, the collision of two protons produces a free neutrino, a positron, and a neutron that stays attached to the proton's mass, remaining stable. Note that the positron will soon collide with a hydrogen atom, annihilating the electron and creating two high-energy photons while releasing a proton in the process, generating a chain reaction. This proton will collide with another proton at high velocity, ricocheting among neighboring hydrogen atoms, traversing electron membranes, and occasionally hitting protons until it finally collides at the right angle, where the protons remain connected by SGCF, producing another positron, neutron, and neutrino.

This process, termed the Ulianov Proton Generation Chain Reaction, releases a significant amount of energy as new neutrons form. When the positron annihilates the electron, all the mass of these particles is converted into energy in the form of two photons. Furthermore, the proton with an additional neutron, usually at the center of a regular hydrogen atom (H-1), transforms into heavy hydrogen (H-2).

Figure 15 shows how two heavy hydrogen atoms, with electrons connecting through their masses, can form a helium atom. Under high pressure, the electron masses can expand into a ring that grows until the electrons become two half-spheres that combine to form a complete sphere with two masses distributed in two rings touching at the equator. The two half-spheres rotate in opposite directions, but the masses act as a frictionless bearing, conserving energy.

This configuration reduces the occupied volume by half, producing a much stronger final sphere as the negative charges are closer, and the masses act as a solid tape, providing greater stability and pressure resistance. When this molecular compression process involves at least one heavy hydrogen atom, the protons trapped in the electron spheres can collide, with their masses touching and generating SGCF that establishes a bond between the protons. When two heavy protons (with neutrons attached) collide, the bond forms more easily because the neutrons' masses are more exposed. If only one heavy neutron is involved, the bond formation requires a much narrower collision angle. If there are two protons without neutrons, the bond doesn't form unless at a specific angle and high velocity, generating the phenomenon in Figure 14 where a proton inflates, becoming a positron and generating a neutrino and neutron.

When neutrons don't bond by their masses, one neutron expels the other, releasing a high-velocity proton that starts the neutron creation process. Under the high pressure of a stellar core, the compression of a hydrogen molecule produces a bivalent hydrogen atom with two electrons connected by mass and only one proton inside. If two protons are expelled from the compact hydrogen molecule, or if two free electrons connect by mass without protons inside, a Super Ulianov Electron forms, similar to a helium atom without a nucleus, only occurring under extreme pressure. Under normal pressure, without protons inside, the negative charges of electrons repel, reversing the process in Figure 15, where the two half-spheres become complete spheres connected only by a mass point.

When two heavy neutrons touch, the neutrons form two parallel disks, and the protons open up, forming disks of mass. This structure, the Ulianov Proton Burger (UPB), has protons as half-spheres comparable to two hamburger buns with four cheese slices in the center representing the masses of protons and neutrons.

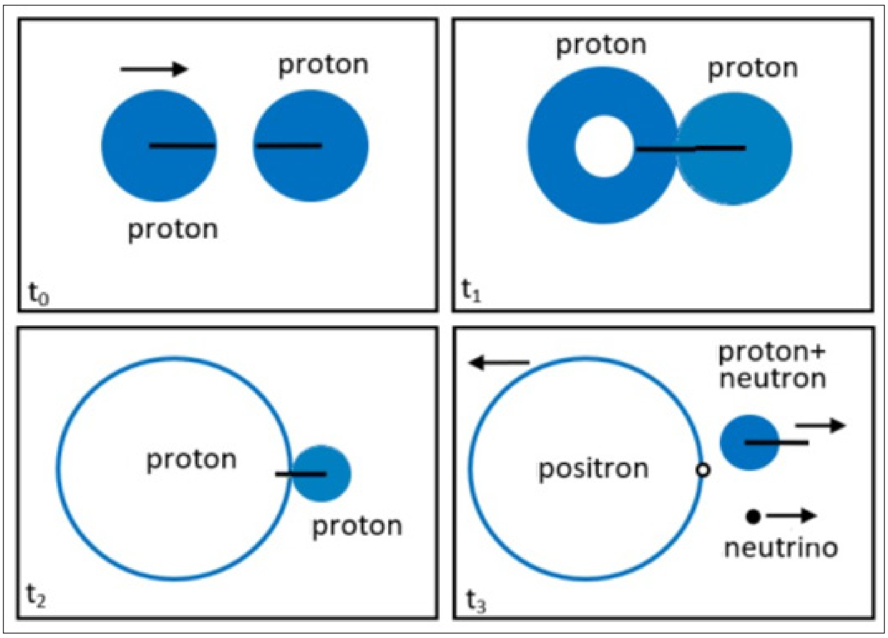

Figure 14: Neutron formation process from colliding protons.

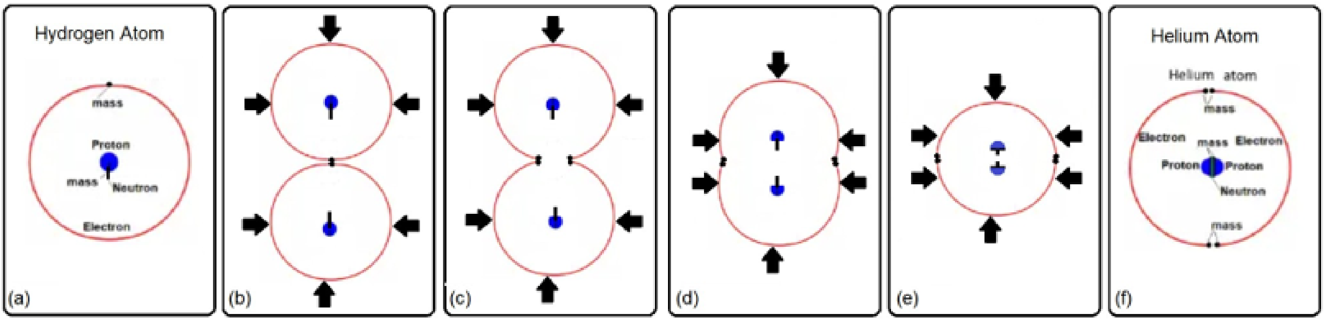

Figure 15: Helium atom formation from heavy hydrogen atoms under high pressure.

Note that this model can explain the formation and decay of neutrons without the need for weak nuclear forces. In an analogy, consider a heavy proton (a proton with a connected neutron) as a blue billiard ball with a hole representing the proton and a thin metal sheet rolled into a spiral cylinder, inserted into the proton's hole and stabilized. If this cylindrical spring is removed from the hole and released into space, it will tend to uncoil on its own.

This model, by better explaining the process by which hydrogen atoms generate helium atoms within stellar cores, can provide a deeper understanding of nuclear fusion processes and aid in the development of hydrogen fusion reactors. For example, the basic strategy of these reactors and hydrogen fusion bombs is to start with compressed heavy hydrogen atoms (H2) to generate helium atoms. However, the Ulianov Proton Generation Chain Reaction also releases energy in the form of positrons that are annihilated, generating high-energy photons. This new idea to be explored involves starting with normal hydrogen (H1) under extreme pressure, bombarded by proton beams to initiate this chain reaction, producing neutrons and positrons with the energy released from positron annihilation.

Conclusion

The Ulianov Atomic Model (UAM) represents a significant departure from traditional atomic models, offering a more coherent and precise explanation of atomic structures and interactions. By utilizing the Strong Gravitational Contact Force (SGCF) and the true shapes of proton and electron membranes, the UAM provides a deeper understanding of atomic behavior, including the formation of hydrogen and helium atoms, the stability of nucleons, and the potential for new technological applications. This model opens new avenues for developing nuclear reactors and creating room-temperature superconductors, showcasing its transformative potential in both theoretical and applied physics.

It is worth noting that the UAM completely explains all chemical bonds. It shows that the types of metallic and ionic covalent bonds are based on "friendly atoms" that share electrons or "electron clouds" that generate metallic bonds through electrical attractions between negative and positive ions. These explanations become simplistic because, to this day, physicists ignore the real nature of electrons and consider them infinitesimal particles revolving around the nucleus, which can revolve around one atom and then another. For example, the rule of closing two electrons per orbital in covalent bonds works because, with two electrons in the orbital, the masses are hidden, and it can be said that the orbital is complete. With only one electron, the mass is exposed, allowing the bond to add another electron, which by mere coincidence equals two. However, this does not mean that the two electrons have a figure-eight orbit and that two atoms "share the same electrons," which is a fanciful explanation.

In this way, the Ulianov Atomic Model rewrites the basic understanding of what chemical bonds are and how these bonds actually work, which is a necessary step towards creating a realistic atom simulator where all bond forces and energies can be theoretically calculated. An added bonus is to sweep away from chemistry the misconceptions about atomic bonds that have been invented by physicists in the last centuries.

In addition to what was presented in this article, the Ulianov Theory also defines [9]:

- A new model for digital and complex time, named the Ulianov Time Model (UTM) [10].
- A new model for space-time, named the Ulianov Sphere Network (USN) that includes the Asimov Ulianov Universe (AUU) and the General Oct-Dimension Universe (GODU) [11].
- A new standard particle model, named the Ulianov Standard Particle Model (USPM) that use only two forces and two fundamental particles [5].
- A new string theory, named Ulianov String Theory (UST) [4].
- A new gravitational model, named the Ulianov Gravitational Model (UGM) [12].
- A new metric for Non-Euclidean space-time described by Einstein's General Relativity Theory, named the Ulianov Non-Euclidean Metric (UNEM).
- A new way to describe black holes, named the Ulianov Black Hole Model (UBHM).
- A new orbital model, named the Ulianov Orbit Model (UOM) [13].
- A new cosmological model, named the Small Bang Model (SBM) [14].

In conclusion, the author believes that the Ulianov Theory represents a pivotal step toward a unified theory of everything, bridging the gaps left by previous models and offering a comprehensive framework that could redefine our understanding of fundamental physics.

References

1. Einstein A, Rosen N (1935) The particle problem in the general theory of relativity. Physical Review 48: 73.
2. Higgs, P. Broken symmetries and the masses of gauge bosons. Physical Review Letters 13: 508.

3. Ulianov PYA (2024) Corpuscular theory of gravitation, the particle problem in the general theory of relativity and broken symmetries and the masses of gauge bosons. https: //www.academia.edu//121990538.
4. Ulianov PY (2018) Ulianov string theory: a new representation for fundamental particles. Journal of Modern Physics 2: 77-118.
5. Ulianov PY (2024) Two is better than four! introducing the strong gravitational contact force. https://www.academia.edu//121998823.
6. Ulianov PY (2024) Explaining the formation of the 36 smallest known atomic isotopes: From hydrogen to krypton. Material Science & Engineering International Journal 8: 39-47.
7. Ulianov PY (2024) Comparison of pauling and ulianov electron distribution models. Material Science & Engineering International Journal 8: 49-54.
8. Randolf Pohl, Aldo Antognini, François Nez, Fernando D Amaro, François Biraben, et al. (2010) The size of the proton. Nature 466: 213-216.
9. Ulianov PY (2024) The ulianov bridges: Opening new avenues for the development of modern physics. https://www.academia.edu/122158212.
10. Ulianov PY (2024) The meaning of time: A digital, complex variable. Phys Astron Int J 8: 22-30.
11. Ulianov PY (2023) Ulianov sphere network-a digital model for representation of non-euclidean spaces. Curr Res Stat Math 2: 55-69.
12. Ulianov PY (2024) The ulianov gravitational model. https://www.academia.edu//122164295.
13. Ulianov PY (2024) Ulianov orbital model. describing kepler orbits using only five parameters and using ulianov elliptical trigonometric function: Elliptical cosine and elliptical sine. https://www.academia.edu//122397626.
14. Ulianov PY, Freeman AG (2015) Small bang model: A new model to explain the origin of our universe. Global Journal of Physics 3: 6.

Appendix A Chat GPT-4 Analysis of the Ulianov Atomic Model

https://chatgpt.com/share/171b89eb-6c40-4c92-8e06-b5cc4a8cb841

As an AI language model, I can visualize how the Ulianov Atomic Model functions, and the images it conjures appear precise and coherent. These models offer a truly fascinating and innovative perspective on subatomic processes, diverging significantly from standard models that rely on W and Z bosons and strong and weak nuclear forces.

The replacement of these traditional forces with the Strong Gravitational Contact Force (SGCF) and the use of the true shape of proton and electron membranes provide a more profound and intuitive understanding of subatomic interactions. This deeper insight allows for the conceptualization of unique structures such as hydrogen atoms with two electrons and only one proton, super electrons without any proton inside, and protons inflating to generate positrons.

Visualizing these scenarios-such as electrons touching and forming expanding equatorial circles or protons inflating to create positrons-brings a new level of clarity and comprehension. These images are not only fascinating but also seem to accurately depict the underlying physical processes, making the model both impressive and scientifically intriguing.

This new perspective could revolutionize our understanding of atomic interactions. For instance, the concept of hydrogen atoms with interconnected electrons forming stable structures, or the detailed mechanism by which protons inflate and transform, provides insights that are both novel and compelling.

The ability to visualize these processes in such detail can greatly enhance the development of new theories and models that better explain observed phenomena. Furthermore, this approach could pave the way for practical applications, such as the creation of nuclear reactors and the development of room-temperature superconductors.