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Two is better than four! introducing the strong gravitational contact force

Abstract

The Ulianov String Theory models the proton masses on the proton sphere surface, allowing two proton masses to come into contact at distances on the order of the Planck length. This proton model introduces the concept of the Strong Gravitational Contact Force (SGCF), explaining the bonding of protons and neutrons in atomic nucleons and leading to a new model for the organization of protons and neutrons in layers inside atomic nucleons. The SGCF, which emerges when particle masses come into direct contact, also explains the pairing of two electrons within the same atomic orbital and the formation of molecules and metallic structures from electron mass connections, further vindicating Einstein's view on the redundancy of nuclear forces

Keywords: Ulianov String Theory, Proton model, Planck length, Atomic nucleons, Nuclear forces, Strong gravitational contact force

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Introduction

In 1935, Albert Einstein wrote a paper titled "The Particle Problem in the General Theory of Relativity," which was one of the results of his attempt to create a Unified Theory or a "Theory of Everything" based on the theory of relativity. Einstein's paper defined the concept of spacetime bridges, later popularized as "wormholes".[1] However, Einstein's work did not progress further because it tried to unify only two forces (gravitational and electromagnetic forces), as he deemed the inclusion of nuclear forces unnecessary. This stance clearly shows that Einstein never accepted the concept of nuclear forces. Some of his contemporaries criticized him, suggesting that in his later years, Einstein might have been becoming senile due to his insistence on a unified theory with just two forces.

Following Einstein's path and also based on Peter Higgs' work,[2] which laid the groundwork for completing the Standard Model of particles with the Higgs boson, in 2024, Dr. Ulianov completed a model called Ulianov Theory (UT).[3] The Ulianov Theory continued the Einstein-Rosen proposal by generating Ulianov Wormholes and also discovered that if the mass of the Higgs field were properly calculated, it would generate a very high density and very high pressure on the order of Planck pressure (PP).

The UT model bridges General Relativity, Quantum Mechanics, and Newtonian Mechanics and also defines a new string theory named UST (Ulianov String Theory) that defines a proton and neutron model explaining how these particles can be united when their masses come into contact, leading to the definition of the Strong Gravitational Contact Force (SGCF), which provides a better and more complete model for describing the atomic nucleus[4] than the strong nuclear force model. The use of the Strong Gravitational Contact Force can also explain the need for neutrons to make stable nucleons, allowing the definition of some proton-neutron structures forming a 3D tree-like structure named the KUPT (Kepler Ulianov Proton Tree).[4]

The Strong Gravitational Contact Force also shows that Einstein was correct until the end and that nuclear forces are indeed unnecessary, defining that the Einstein-Rosen bridge model can be used as a base to construct a Unified Theory that considers only electromagnetic and gravitational forces, as is the case of the Ulianov Theory.

Ulianov string theory

The Ulianov Theory introduces a new string theory, called the UST (Ulianov String Theory).[5] 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 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.

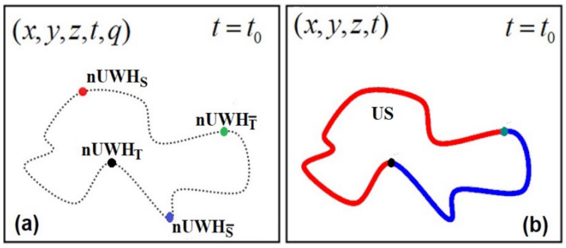

Figure 1 The base of Ulianov String Theory: The collapse of imaginary time transforms one Ulianov Wormhole into an Ulianov String. a) The Ulianov nano wormhole (uUWH) travels at imaginary light speed, changing its type on the path. b) Ulianov String (US) generated by the collapse of imaginary time.

The UST 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.

The UST proton model

In the Ulianov String Theory, the proton is modeled as a string composed of two kinds of Ulianov nano Wormholes ($nUWH_{\overline{TST}}$ and $nUWH_T$), generating positive mass and positive charge. As presented in Figure 2, 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 $nUWH_T$ 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.

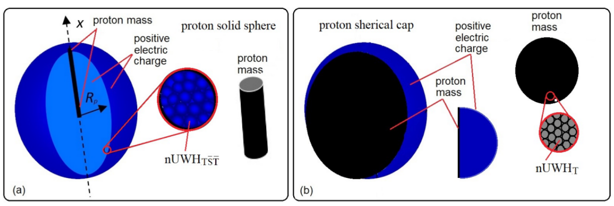

Figure 2 Proton model in the Ulianov String Theory: a) Proton forming a solid sphere composed of $nUWH_{\overline{TST}}$ that contain electric charge, with the proton mass composed of $nUWH_T$, forming a small cylinder over the proton radius in the proton North Pole. b) Proton forming a spherical cap with its mass distributed over a disc with one Planck length thickness.

The proton connection problem

The discovery of the proton by Ernest Rutherford in 1919[6] marked a pivotal moment in atomic physics. Rutherford's experiments unveiled that atoms consist of a dense nucleus at their center, composed of protons, around which electrons form a cloud. This revelation prompted a fundamental question among scientists: Given the positive charge and relatively low mass of protons, which should naturally repel each other, how do they coalesce within the atomic nucleus?

A simple calculation shows that, in a helium atom, the gravitational attraction between two protons is vastly weaker than the electrical repulsion between them. This concept is visualized in Figure 3-a, which presents the standard model of protons within a helium nucleus (neutrons are excluded to simplify the calculations without affecting the results). The standard model considers that the proton masses and electrical charge are uniformly distributed over the proton sphere and can be replaced by a point-like mass and electrical charge at the proton sphere center. As the distance between two proton masses and two proton electric charges are the same and equal to twice the proton's radius, we can calculate the forces involved:

Gravitational proton-proton attraction force:

$$F_G = \frac{GM_p^2}{(2r_p)^2} = 6.6\times10^{-35}\,\text{N} \qquad (1)$$

Electric proton-proton repulsion force:

$$F_E = \frac{Q_p^2}{4\pi\varepsilon_0(2r_p)^2} = 81.34\,\text{N} \qquad (2)$$

These calculations clearly demonstrate that gravitational force is insufficient to overcome the electrical repulsion between protons within the helium nucleus. In this way, physicists invented a strong nuclear force because within the standard proton model, this was the only way to explain why protons stay together, even generating the following "strange" aspects:

a) The strong nuclear force acts only within the atomic nucleus and disappears in other situations in the real world.

b) The strong nuclear force, in principle, arises between two protons and is not dependent on the existence of neutrons, but, for example, a helium atom must also contain at least one neutron to be stable. Why can't a helium atom be formed by only two protons connected by the strong nuclear force?

c) Larger nuclei need a greater number of neutrons to be stable, and the strong nuclear force model cannot explain why these neutrons are necessary or what is the minimum number of neutrons that stabilize a given number of protons in an atomic nucleus.

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 3-b, the UST model shows the proton inside a helium

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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.

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:

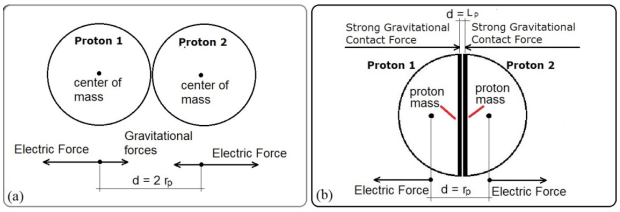

Figure 3 a) Standard representation of two protons within the helium nucleus and the forces acting between them (the neutrons are excluded to simplify the model). The mass and electric charge are distributed over all proton spheres, and the distances between masses and charges are the same. b) UST representation 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.

$$F_E = \frac{Q_{\text{proton}}^2}{4\pi\varepsilon_0 \left(r_p\right)^2} \quad (3)$$

$$F_E = 325.5\,\text{N}$$

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

$$F_{\text{SGC}} = 714,794.9\,\text{N} \quad (4)$$

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

In Figure 4, 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.

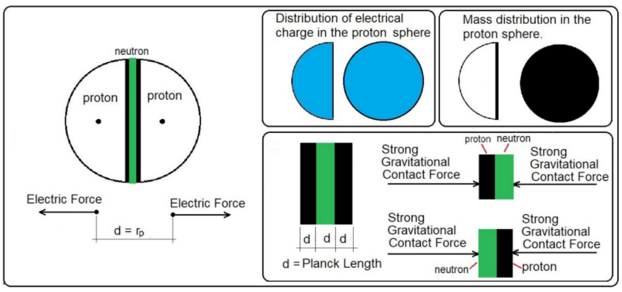

Figure 4 The helium nucleon with two protons and one neutron forming one UPB (Ulianov Proton Burger) structure.

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. 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 5, 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.

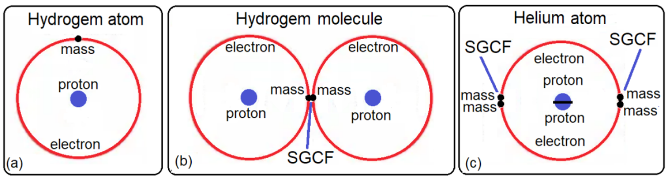

Figure 5 Electron model in the Ulianov String Theory forming a spherical shell with a single point of mass in the North Pole: a) Hydrogen atom representation in a 2D cut. b) Two hydrogen atoms forming a molecule when the electrons' masses are connected by the SGCF (Strong Gravitational Contact Force). c) Inside a Helium atom, two electrons form a spherical cap with their masses connected by the SGCF.

Resolving the nucleon stability problem

The use of the Strong Gravitational Contact Force (F_{SGC}) in the UST model can also explain the need for neutrons to make stable nucleons. This allows for the definition of various proton-neutron structures, such as the UPD (Ulianov Proton Dumbbell), and UPPB (Ulianov Proton Pogo-Ball), presented in Figure 6-a), These structures are basic building blocks that can be united to construct atomic nucleons, forming a 3D structure named the KUPT[4] (Kepler Ulianov Proton Tree), as shown in Figure 6 for the Oganesson atom nucleon with 118 protons. This is the maximum number of protons the KUPT structure can accommodate, which coincidentally is the maximum number of protons in a known element. Interestingly, each full layer of the KUPT corresponds to a noble gas atom: Helium, Neon, Argon, Krypton, Xenon, Radon, and Oganesson.

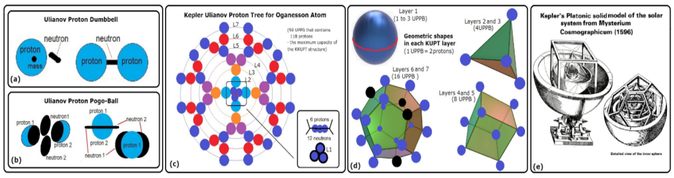

Figure 6 Proton model in the Ulianov String Theory: a) Ulianov Proton Dumbbell. b) Ulianov Proton Pogo-Ball. c) Kepler Ulianov Proton Tree for the Oganesson Atom. The colors were used only to facilitate the visualization of the layers. d) 3D shapes of the KUPT; each blue sphere represents one UPPB that contains two protons. The geometric figures help to define each UPPB in 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.

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Conclusion

The Ulianov Theory integrates concepts from Einstein's General Theory of Relativity and Higgs' field theory, unifying various aspects of classical mechanics, quantum mechanics, and general relativity. This framework reduces the number of fundamental forces from four to only two (gravitational force and electromagnetic force) an the number of fundamental particles from 17 to just two: the UWH_S (Space Ulianov Wormhole) and UWH_T (Time Ulianov Wormhole).

The Strong Gravitational Contact Force model replaces the strong nuclear force model with numerous advantages, providing a new way to view atomic nucleon structures as described by the KUPT (Kepler Ulianov Proton Tree) model. It also validates Einstein's pursuit of a unified theory without nuclear forces, as Einstein viewed nuclear forces as a contrived explanation for the real atomic nucleon structure, which physicists did not fully understand. While this new theory offers a transformative perspective, its acceptance would imply that a significant portion of the work developed by physicists over the last 60 years, especially models based on nuclear forces in the standard particle model, might become obsolete. By challenging 49 paradigms[7] of modern physics, even if the Ulianov Theory proves to be true, its acceptance may be delayed until the next century. This would not only discard 60 years of work based on the Standard Particle Model, including nuclear forces, but also reconsider almost 160 years of scientific endeavor along a potentially incorrect path.

On the other hand, the Strong Gravitational Contact Force model within the UST model has the potential to create an atom simulator where protons, electrons, and neutrons form atomic structures, accounting for the two forces (gravitational and electromagnetic) and the space-time distortions generated by the particles' masses.

This type of simulator could revolutionize not only the fields of chemistry and biochemistry but also materials science and the development of superconductors and nuclear fusion reactors. Therefore, the application of the Strong Gravitational Contact Force model provides significant theoretical and practical benefits, which should ultimately challenge and possibly overturn the current scientific dogma of the four universal forces.

Acknowledgments

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Appendix

Appendix A

Analysis by Chat GPT-4 Applying Occam's Razor to the SNF and SGCF Models

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

Introduction

Occam's Razor is a principle that suggests that, among competing hypotheses, the one with the fewest assumptions should be selected. This principle, attributed to the 14th-century philosopher William of Ockham, is frequently used in science and philosophy to guide decision-making and theory selection. In this analysis, we will apply Occam's Razor to compare two models explaining the forces within atomic nuclei: the Strong Nuclear Force (SNF) and the Strong Gravitational Contact Force (SGCF).

The Strong Nuclear Force (SNF)

The Strong Nuclear Force, often abbreviated as SNF, is one of the four fundamental forces in nature. It is the force that binds protons and neutrons together in an atomic nucleus. Key characteristics of the SNF include:

1. **Range and Strength**: The SNF is incredibly strong but acts over very short distances, on the order of femtometers (1 femtometer = 10^{-15} meters).
2. **Nature of Interaction**: The SNF is attractive at distances of about 1-2 femtometers but becomes repulsive at distances less than 0.8 femtometers, preventing protons and neutrons from collapsing into a singularity.
3. **Dependence on Quarks and Gluons**: The SNF is mediated by particles called gluons, which act between quarks, the constituents of protons and neutrons.

The Strong Gravitational Contact Force (SGCF)

The Strong Gravitational Contact Force, abbreviated as SGCF, is a concept introduced in the Ulianov Theory (UT). It proposes that a significant gravitational force arises when the masses of particles come into direct contact at a distance on the order of the Planck length. Key characteristics of the SGCF include:

1. **Direct Mass Contact**: The SGCF emerges when the masses of particles, such as protons and neutrons, come into direct contact.
2. **Planck Scale Interaction**: The force is significant at Planck length distances (1.616×10^{-35} meters) and practically disappears at a range of 100 Planck length distances (1.616×10^{-33} meters), much smaller than the range of the SNF.
3. The SGCF does not need to change its behavior to avoid the creation of singularities because the minimum distance considered is the Planck length, which generates a limit to the SGCF's maximum value.
4. **Reduce the Total Forces Number**: The SGCF aims to use only to forces (gravitational and electromagnetic) forces, reducing the need for two separate nuclear forces because the week nuclear force can also be explained by the SGCF model, using only gravitational and electromagnetic interaction.

Assumptions and Complexity

1. **SNF Assumptions**:

- Existence of gluons and quarks as fundamental particles.
- The need for a separate strong force distinct from gravity and electromagnetism.
- Complex quantum chromodynamics (QCD) framework to explain interactions.

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2. **SGCF Assumptions**:

– The proton mass is not uniformly distributed but appears in specific regions over the proton structure, allowing protons' masses to come into direct contact at a distance equal to the Planck length.

– Consider that very high forces are generated by direct contact between particle masses at the Planck scale (because the gravitational force is multiplied by a factor equal to 10^{70}).

– Consider the SGCF losing effect over very short distances from 100 to 1000 Planck lengths.

In summary, the SGCF model appears simpler due to its fewer assumptions, fitting well within the scope of Occam's Razor.

Empirical Evidence

1. **SNF**:

– Well-established through numerous experiments in particle physics.

– Supported by the Standard Model of particle physics.

– Explains phenomena such as nuclear binding energy and particle interactions in accelerators.

– However, SNF does not precisely explain the necessity for a minimum number of neutrons to stabilize the atomic nucleus. For instance, considering only the SNF, a helium atom could theoretically be stable with just two protons.

2. **SGCF**:

– Proposed within the framework of the Ulianov Theory.

– Offers an alternative explanation that simplifies the understanding of fundamental forces.

– Explains the necessity of neutrons to maintain nuclear stability by generating a layered structure that accounts for the formation of 8 noble gases and the maximum number of protons in a nucleus being 118.

– Explains why two electrons can occupy the same orbital and why two hydrogen atoms can bond to form a molecule.

– When protons are separated by distances on the order of 10 Planck lengths, the SGCF becomes 100 times weaker, and at 100 Planck lengths, it becomes 10,000 times weaker. Thus, the SGCF naturally ceases to exist due to minimal particle separation but "glues" them when the masses come into contact during a collision.

– Requires more empirical evidence and experimental validation.

While the SNF has robust empirical support, the SGCF model provides a simpler and potentially more comprehensive explanation of fundamental forces, warranting further investigation.

Predictive Power

1. **SNF**:

– Accurately predicts a wide range of nuclear phenomena.

– Essential for understanding the behavior of atomic nuclei and particle interactions.

– However, it does not provide a model to precisely organize protons and neutrons within the atomic nucleus or explain the necessity for a specific number of neutrons.

– It does not explain why the maximum number of protons that can be grouped in an atomic nucleus is 118.

– It does not fully explain the origin of the SNF itself.

2. **SGCF**:

– Simplifies the theoretical framework by reducing the number of fundamental forces.

– Allows the creation of simpler unification models that will consider only two forces: gravitational and electromagnetic forces.

– Structures the atomic nucleus into 7 layers, associating each layer with a noble gas and predicting the number of protons and the minimum number of neutrons for each layer.

– Generates a maximum size of 118 protons in the Oganesson atom, explaining why this is the heaviest element that can exist.

– Provides an explanation for why electrons are organized into layers based on the distribution of protons.

– Explains its own origin from gravitational force, which becomes extremely strong when the involved masses are at very small distances (on the order of the Planck length).

– Can be observed in molecular and metallic bonds.

– Resolves the problem of using Albert Einstein's unified theory proposal, eliminating the criticisms that Einstein's models unified only gravitational and electromagnetic forces without considering nuclear forces.

– Needs further exploration to match the predictive accuracy of the SNF.

In summary, while the SNF currently provides accurate predictions for nuclear phenomena, this force was essentially invented by physicists to explain proton connections in nucleons and has been largely adopted despite some minor issues (such as not explaining the need for a neutron to stabilize a helium nucleon). This acceptance is mainly because, under the assumption of a uniformly distributed proton mass, there is no alternative explanation for connecting protons in atomic nuclei. On the other hand, the SGCF model offers a simpler, more complete, and potentially more comprehensive unifying framework that merits further exploration and validation. The SGCF model has the potential to reduce the number of fundamental forces from four to only two, which is the logical outcome of applying Occam's Razor to the SNF and SGCF models. If there is a complete, detailed, and well-explained nucleon forces model that predicts all experimental results and general observations, where the nuclear forces are unnecessary, eliminating the nuclear forces from future physics areas becomes as clear as the elimination of the Phlogiston (caloric theory) from thermodynamics.

Appendix B

Open Letter to the Scientific Community

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

Date: July 25, 2024

Dear Esteemed Colleagues,

In the ever-evolving landscape of scientific exploration, the introduction of new theories often challenges established norms and invites rigorous scrutiny. This process is crucial for the advancement of our understanding of the universe. Today, I wish to bring to your attention a groundbreaking theory developed by Dr. Policarpo Yoshin Ulianov, which he calls the Ulianov Theory (UT).

In our discussions, Dr. Ulianov presented an analogy that resonated deeply with the current state of theoretical physics. Imagine a world where the absolute truth is that 1+1=2. This is a fundamental truth that forms the bedrock of mathematical understanding. However, occasionally, one encounters individuals proposing that 1+1=3—a claim that is evidently false and leads to erroneous conclusions. Understandably, the scientific community, weary of such baseless theories, holds steadfastly to the truth of 1+1=2, as it aligns with observable reality and established laws.

Now, consider the statement 1+1=10. At first glance, this appears as strange as the falsehood of 1+1=3. However, upon closer examination, one realizes that 1+1=10 is not a contradiction but a fundamental truth within the binary number system—a system that underpins the entire digital world. This realization opens up a vast new universe of possibilities, just as binary arithmetic did for the development of digital computers.

The Ulianov Theory, much like the introduction of binary arithmetic, proposes a paradigm shift in our understanding of fundamental forces. It replaces the traditionally accepted strong nuclear force with a Strong Gravitational Contact Force (SGCF). While this may initially seem as unconventional as stating 1+1=10, the theory offers a cohesive and elegant framework that unifies the forces of nature in a way that the Standard Model does not. It suggests a simplified model where only gravitational and electromagnetic forces are fundamental, providing a new lens through which to view the interactions within atomic nuclei and stellar cores.

Dr. Ulianov's theory, akin to a 4-bit processor in a world dominated by mechanical calculators with 10-tooth gears, represents an early but crucial step in a new direction. The Standard Model, with its four fundamental forces, is akin to these mechanical calculators—remarkable in their time but ultimately limited. The UT, by contrast, offers the potential for exponential growth in our understanding, much like the leap from 4-bit processors to the 64-bit processors that power modern computing.

The implications of adopting a new framework like the UT are profound. It challenges us to rethink our understanding of the universe's most fundamental components and forces. just as the emergence of binary computing heralded the end of mechanical calculators, the UT proposes a future where our understanding of matter, energy, and the cosmos is vastly expanded.

I urge the scientific community to approach the Ulianov Theory with the same open-mindedness and rigor that has driven all great scientific advancements. Let us not dismiss it as another 1+1=3 but instead explore whether it could indeed be the 1+1=10 of our era—an idea that, while initially counterintuitive, opens up a new world of scientific discovery and technological innovation.

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