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The Nature of the Electron

Noncommutative Quantum Gravity

Highlights

The Formation of the Universe

Charge Neutralization Process (CNP)

Discovering Thoughts, Inventing Future

VOLUME 25 ISSUE 2 VERSION 1.0

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Quantum Interpretation of Radar Singnals Reveals Two-Miiles Deep Constructions under the Pyramids – Who Built the Pyramids?

By Prof. Maria Kuman

Holistic Research Institute, United States

Abstract- The article reveals that if the builders of the pyramids knew about Pi, the golden ratio, and the speed of light, they must have had advanced knowledge. However, this was not enough to convince the Egyptologists that the Pharaohs could not have built the pyramids. I hope the new stunning discovery from the latest quantum interpretation of radar scanning would. 1/New chambers were found in the pyramids, and 2/ two-miles-deep constructions were found under the pyramids. This raises the question: Were the pyramids built by extra-terrestrials and who were these extra-terrestrials? This article reveals that the pyramids were built by the Nephilim from the Bible (the Fallen Angels), who mated with Earthly women. But they had to first genetically re-engineer the Earthly women to be able to do so (because they were different species). This makes the Nephilim (who built the pyramids) our fathers and our co-creators as species. The article even reveals from where they came and who they were.

Keywords: *pyramids, latest discoveries in the pyramids, latest discoveries under the pyramids, who built the pyramids, extra-terrestrials built the pyramids, who were the extra-terrestrials.*

GJSFR-A Classification: *LCC: QB54, DT60*

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Keywords: pyramids, latest discoveries in the pyramids, latest discoveries under the pyramids, who built the pyramids, extra-terrestrials built the pyramids, who were the extra-terrestrials.

I. Introduction

Corrado Malanga (from the University of Pisa) and Filippo Biondi (both doing radar and remote sensing research with the University of Strathclyde) published their stunning results in 2022.In their research they used Synthetic Aperture Radar (SAR) data, but Filippo Biondi developed a software that transforms the radar signals into phonon information, which allows detection with mm accuracy.

This allowed them to uncover deep underground structures under the pyramids (invisible to the traditional methods) and revealed new internal structures in the pyramids that were never seen before. The title of their article was: "Synthetic Aperture Radar (SAR) Doppler Tomography Reveals Details of Undiscovered High-Resolution Internal Structure of the Great Pyramid of Giza" [1].

The analyses of dozens of to mographic SAR images made from different angles enabled 3D reconstruction of the pyramids and the constructions under them: 1/inside the pyramid of Khafre 5 identical structures were found (one of them never seen before), and 2/ deep beneath the pyramid they found 8 cylindrical structures, which appear to be vertical wells, hollow inside, and with descending spiral pathways outside.

The 8 vertical cylindrical structures, were arranged in two parallel rows from north to south, and descended to a depth of 648 meters where they all merge into two large cubic structures of 80 meters per side. The entire underground structure extended approximately two kilometers beneath the earth surface, and it was found beneath all three pyramids of the Giza Plateau complex.

Therefore, the claim of the mainstream Egyptologists that the Giza pyramids were tombs of the pharaohs Khufu, Khafre, and Menkaure built around 2500 BC cannot be true. First, no pharaoh was ever found buried in any of the pyramids. Second, the mathematics used in the pyramid construction (Pi, the golden ratio, and the speed of light) also suggests that the builders of the pyramids were more intelligent than the pharaohs.

Nikola Tesla believed that the pyramids harnessed earth's energy and this energy was transmitted wirelessly. This inspired his experiments in wireless energy transmission (with scalar waves). However, his genius insight and his experiments with wireless energy transmission were not appreciated because we worship the God called Money and there was no way to measure the wireless energy and charge the consumers for what they have used.

II. I was able to Unite the Gravitational and Electromagnetic Fields

Einstein was saying for 35 years that he was working on the unification of the gravitational and electromagnetic fields, but never published anything. Now, after I have united the gravitational and electromagnetic field [2], I understand why he couldn't do it. Such unification requires knowledge of nonlinear physics, which Einstein didn't have.

Nonlinear physics (being nonlinear) deals with vortices (spinning clockwise) and anti-vortices (spinning counterclockwise). Through nonlinear physics I understood that the gravitational field is much weaker than the electromagnetic because the gravitational field is electric vortex (spinning clockwise) on top of magnetic

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anti-vortex (spinning counterclockwise). This annihilated most of the energy of the electromagnetic field.

This sandwich of electric vortex (spinning clockwise) on top of magnetic anti-vortex (spinning counterclockwise) is the basis of the torus shape electromagnetic fields of all stars (including our Sun) (Fig. 1), planets (Fig. 2), and all living beings (Fig. 3). Since the coupled vortex and antivortex are in dynamic equilibrium, all stars, planets, and living beings have cycles of activities. The unification of the gravitational and electromagnetic field, helped me understand the purpose of building pyramids.

The pyramids were built on top of magnetic anti-vortices emitting earth's energy. This was found by Dr. Alvaretz, who tried to measure cosmic rays in the pyramids and couldn't measure anything because the arrows of his instruments were dancing left and right, which happens when the instruments are on top of anti-vortex emitting earth magnetic energy. The geometric shapes of the pyramids create vortices of cosmic electric energy, which top up the emitted by the earth magnetic energy [3], [4].

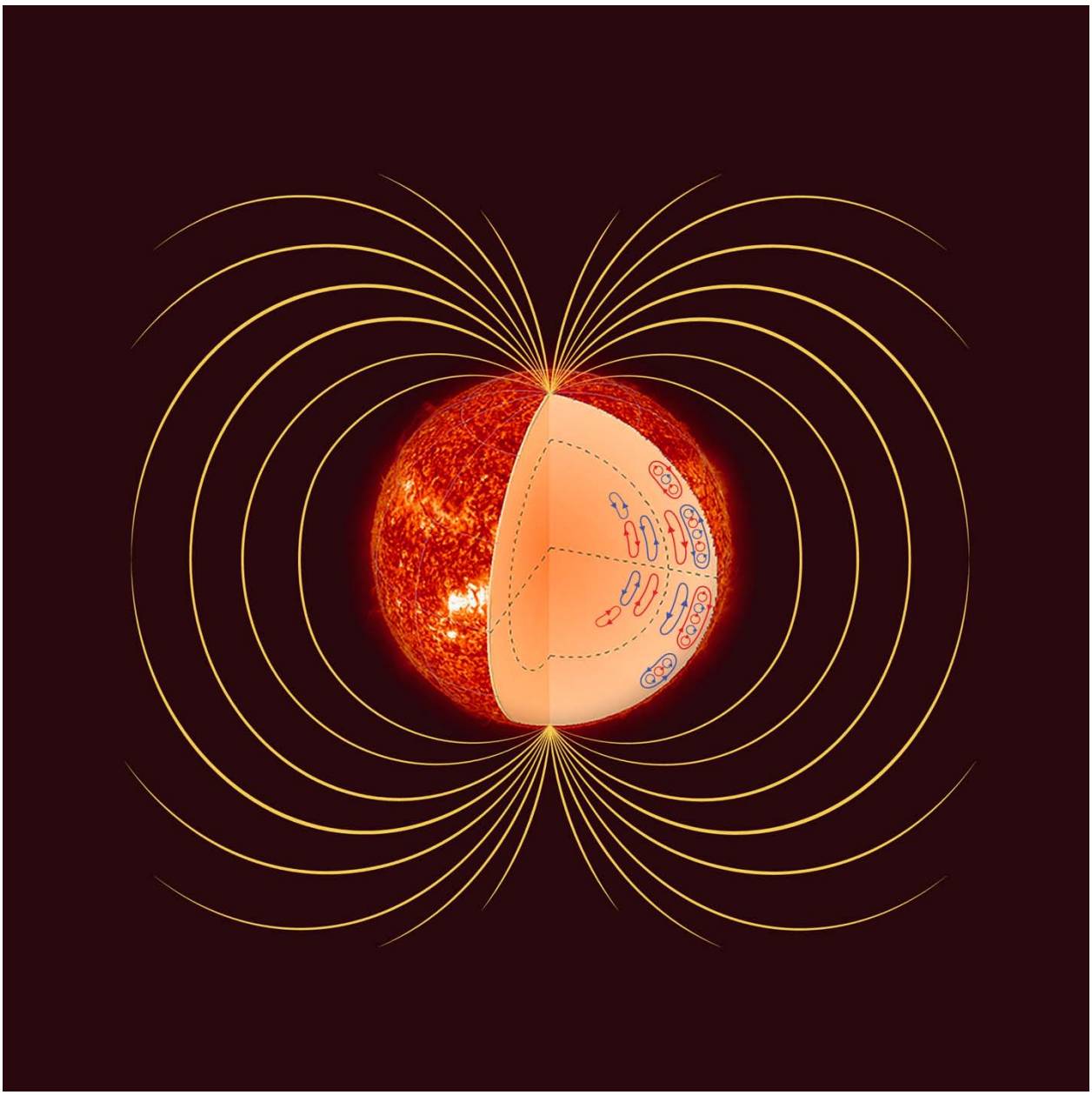

Fig. 1: The torus-shape electromagnetic field of the Sun

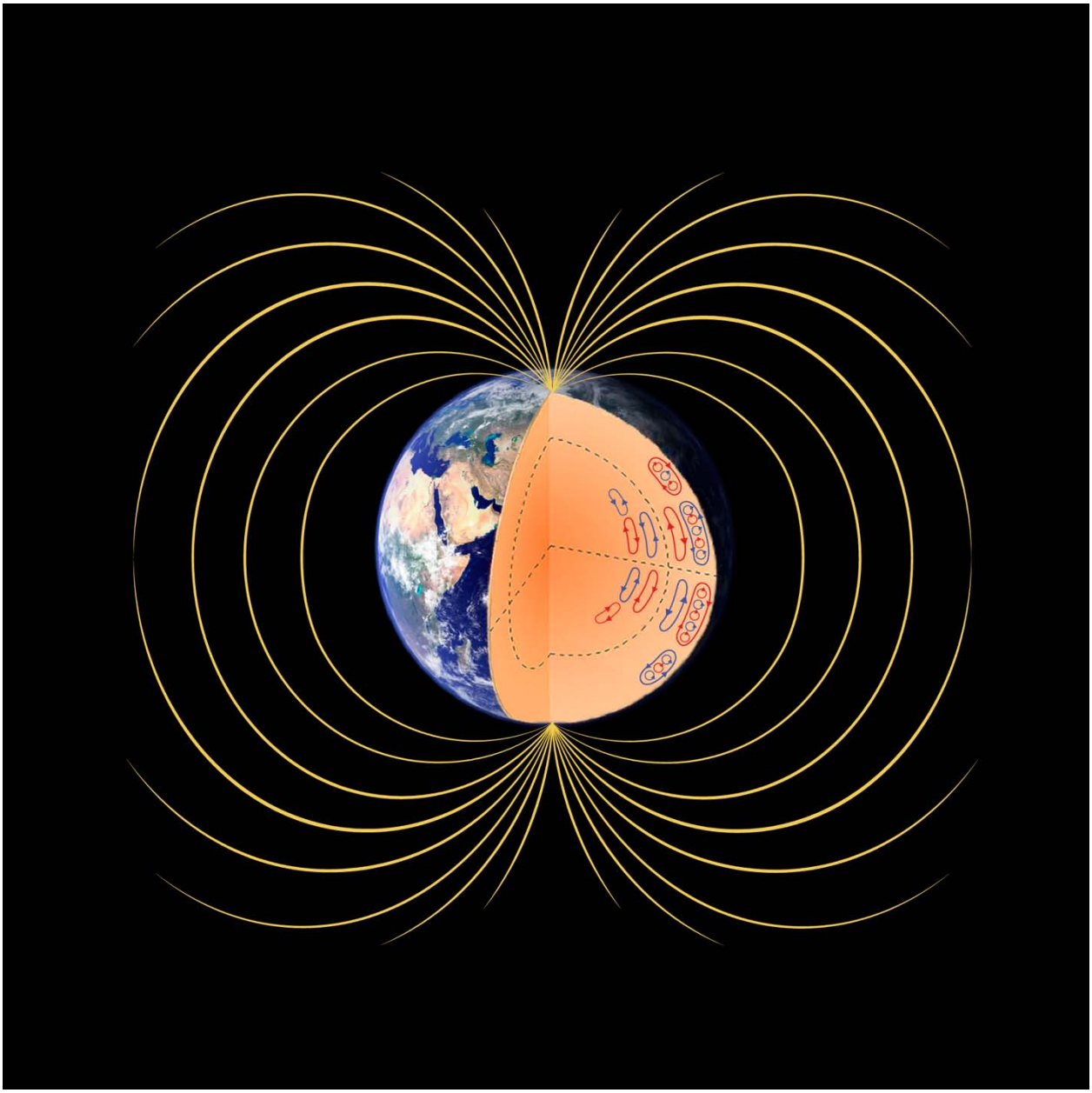

Fig. 2: The torus-shape electromagnetic field of planet Earth

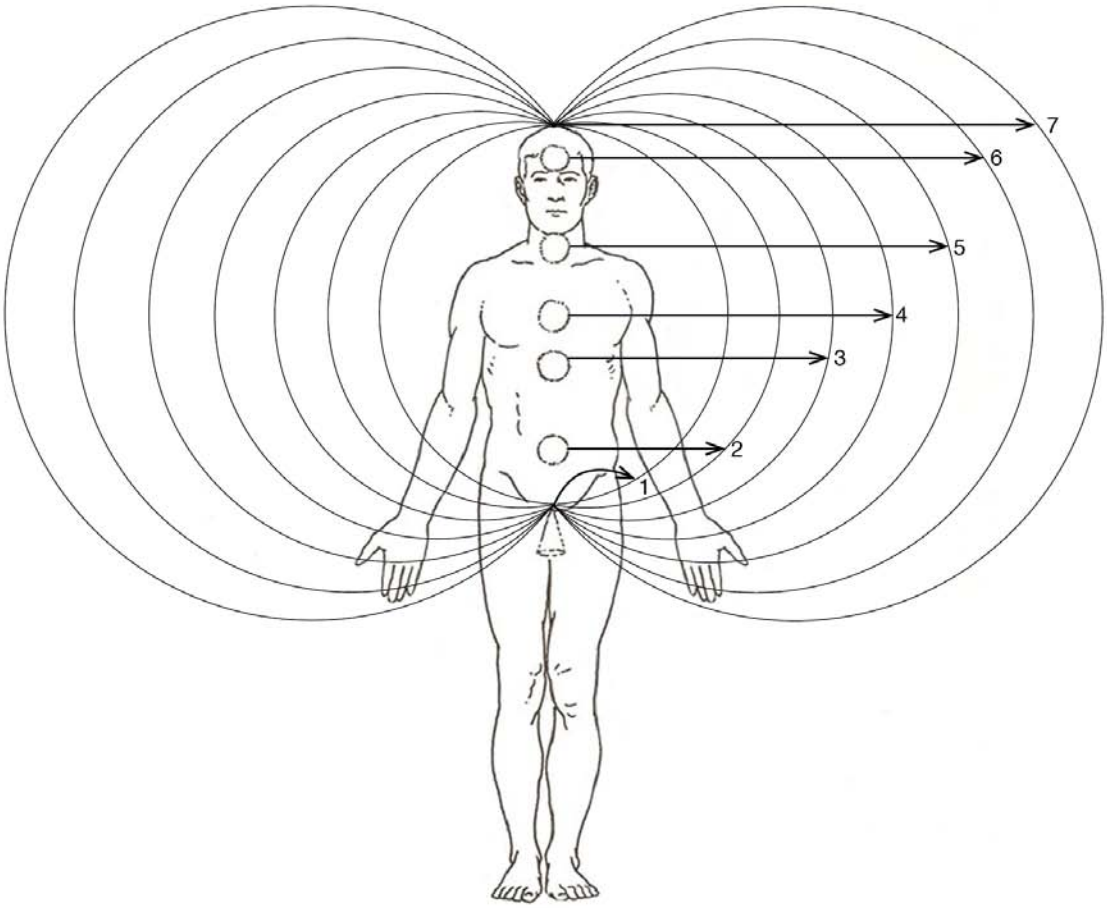

Fig. 3: The torus-shape electromagnetic field of a man

III. My Understanding of the Purpose of Pyramid Building Came from the Unification of the Gravitational and Electromagnetic Fields

The building of the pyramids served dual purpose. The pyramids were built on top of earth magnetic anti-vortices emitting earth magnetic energy because the geometric form of each pyramid created a vortex of cosmic energy (in the Space Matric NEMF) [5], which topped the earth anti-vortex. If not topped with pyramids, the energy of the magnetic anti-vortices would be released as destructive seismic energy.

The second purpose of building the pyramids was to harvest the united earth magnetic and cosmic electric energy, which was emitted from a crystal on top of the pyramid as wireless energy to be used by consumers. How do I know about the crystal on top of each pyramid? During the Second World War, a pilot got lost when flying over the Himalayas. He spotted a huge fully-preserved pyramid under his plane with shining walls and crystal on the top [3].

I even have an explanation of why the pyramids were covered with shiny reflecting tiles. The refractive index of this material must have played a crucial role in the wireless energy transmission without loses.

IV. The Material Covering the Pyramids must have had Zero Refractive Index

The refractive index of a material is the dimensionless ratio of the velocity of light propagation in vacuum c to the velocity of light propagation in the material v_m ($n=c/n_m$). When the velocity of light propagation in a material v_m is higher than the velocity of light in a vacuum c - Cherenkov's light emission is observed. Are there materials, in which the light propagation v_m is so big that the refractive index n is closed to 0?

Since the wave length $\lambda = 2\pi c/n\omega$, for materials with zero refractive index the wavelength λ will be infinite, which means that the wave will become delocalized. Such materials are called near-zero-index materials or shortly NZI materials. I. Liberal and N. Engheta showed in their article [6] that in such NZI

materials the electromagnetic fields are perfect with total inhibition of turbulence.

Normally, when an electromagnetic wave encounters an object, part of it is reflected. However, the NZI material (with refractive index n = 0) would not experience any reflection or scattering. What this has to do with the pyramids? In my article [4], I have the proof that the pyramids were used to harvest the magnetic field of the earth and the cosmic electric field to produce electromagnetic energy for common use, which was wirelessly transmitted.

The pyramids used to be covered with a special material, which is now missing because it has been stolen for personal use as a building material. What kind of material was this? I believe that the material covering the pyramids have been NZI material with refraction index n close to zero because such NZI material would allow maximally efficient transmition of the harvested electromagnetic energy without losses (regardless how uneven the terrain is, or regardless how many mountains are on the way).

V. Who Built the Pyramids?

The Bible teaches that the Nephilim (the Fallen Angels), who were supposed to just watch (and not interfere in anything going on Earth), mated with Earthly women. However, since the Nephilim were Reptilians, to be able to mate with the Earthly women, they needed to first genetically modify their DNA. That is why we all have Reptilian brains at the back of our heads, and we can house dark Reptilian Spirits in addition to the light God Spirit, which makes us good and Evil in one. This is how we appear on Earth as species.

Thus, I am willing to believe that the pyramids were built at beginning of our existence on Earth as this type of species. So, the Nephilim are the ones that built the pyramids. If so, the pyramids were built many, many thousands of years ago. Probably, at these earlier times of Earth's history, the Earth seismic activity was much higher, and by building the pyramids on top of anti-vortices emitting earth magnetic energy, the Nephilim reduced the Earth's seismic activity and made the Earth more inhabitable [3].

At the same time, they harvested Earth's magnetic energy and cosmic electric energy, which through wireless transmission (with zero energy losses) was delivered for everyday energy use [3], [4].To be able to harvest the Earth magnetic energy and the cosmic electric energy for their energy needs, the Nephilim must have had very advanced technology and advanced knowledge (knowledge of Pi, the golden ratio, and the speed of light).

They had the knowledge, but they were Evil, and for following the Bad (Evil) Way, they were kicked from their planet (the fourth planet orbiting Sirius).

VI. Conclusion

In conclusion, we must say that the pyramids do have cosmic origin – they were built by the Nephilim (Fallen Angels), who (according to the Bible) mated with Earthly women. But since the Nephilim were Reptilians, they had to genetically modify the Earthly women to be able to mate with them, and from this genetic modification comes the Reptilian brain on the back of our heads. This makes the Nephilim our fathers, and our co-creators as species, which makes the pyramids as old as we are as species.

However, regardless how old the pyramids are, now when we desperately look for energy sources that do not pollute the environment, we can turn our eyes to the pyramids as sources of clean wireless energy. The only thing we need to do is: 1/ to restore the crystal on the top of each pyramid, and 2/ to restore the surface of the pyramids by covering them with NZI material, which would allow transmission of the wireless energy without losses. It could be done if we stop worshiping the God called Money.

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The Formation of the Universe

By Changming Wang

Abstract- Unity is defined as matter or a system with its maximum energy limit. Unity Force is matter's tendency of being unity, expressed as attracting while energy sharing in a unity or repelling while excess-energy releasing out of the unity. The universe was (and still is) formed of four base particles: proton, electron, neutrino, and photon, created from the Big Bang. Then, each electron bonded with a photon as an electron unity, so that light could not propagate; each proton bonded with a neutrino as a proton unity, and the two unities made the universe opaque. No gravity, nor gravitational collapse, is needed to draw these base particles together because they were dense and hot in the first place when created. The high density and temperature were perfect for nuclear fusions, and the force of nuclear fusion (unity force) would keep pulling particles together. Most nuclear fusion centres with excess-energy releasing, form stars and planets. The rest, extra-large nuclear fusion centres with inner cores unable to release excess-energy as a repelling force, form black holes with much stronger attracting unity forces of their respective galaxies. Nuclear fusion produced the first light, and then atom formation brought the dawn of the universe.

Keywords: the universe, big bang, base particles, energy sharing, energy limit, excess-energy, unity, unity force, nuclear fusion, black hole, star systems, atoms, galaxies.

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The Formation of the Universe

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Keywords: the universe, big bang, base particles, energy sharing, energy limit, excess-energy, unity, unity force, nuclear fusion, black hole, star systems, atoms, galaxies.

I. Introduction

The Big Bang model[1]describes how the universe began by expanding from a single point of infinite density and heat, known as singularity.

Physicist Edwin Hubble[2] in 1929 first discovered that the universe was expanding: galaxies were moving away from Earth at a rate that accelerates proportionally with distance. Physicist George Gamow and colleagues[1] in the 1940s developed the modern version of the Big Bang.

In 1965, the discovery of the cosmic microwave background radiation[3] caused by high temperatures and densities in the distant past, agreed with the Big Bang model's prediction. The beginning of the Big Bang was estimated to be 13.8 billion years ago by measuring the expansion rate of the universe[1,4].

The Big Bang model depicted how the universe went from there and then on[1,4]:

1. *Expansion and cooling:* this singularity went through a period of rapid expansion and cooling, known as cosmic inflation.
2. *Formation of particles and atoms:* as the universe expanded and cooled, subatomic particles (protons, neutrons, and electrons) formed, and eventually, these particles combined to form atoms, primarily hydrogen and helium.
3. *Formation of stars and galaxies:* over billions of years, gravity caused these atoms to clump together, forming clouds of gas and dust, which eventually collapsed under their own gravity to form stars and galaxies.
4. *Evolution of structures:* galaxies then clustered together to form groups, clusters, and super clusters, creating the large-scale structures we observe in the universe today.

But this paper will show that the current Big Bang model still has some flaws and misconceptions, by representing the universe from the Big Bang, based on the following observed phenomena[4]:

1. The uniformity of the universe,
2. the abundance of light elements,
3. the cosmic microwave background radiation, and
4. large-scale structure.

Before any scientific research, three simple scientific rules are required:

II. The Scientific Rules

1. Observations and inquiries. Science always begins with observations and inquiries.
2. Hypotheses with simplicity (The Simplicity Rule):
   1) Based on known facts and clearly defined concepts.
   2) By avoiding and excluding unnecessary factors and dimensions, assumptions or speculations.
3. Testing of the hypothesis through experiments and statistical analysis, with replications and peer reviews, then, circulating back to rule 1, hopefully with better understanding and predictive power.

Now, let us begin.

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III. Formation of base Particles and Nuclear Fusion

The observed uniformity of expansion[1,4] indicates that the universe had only one origin of expansion.

As the universe expanded and cooled, matter formed as free protons, electrons, neutrinos, and photons (base particles[5]), in descending order of mass.

Then, each proton (p) shares energy with a neutrino (ν) as a proton unity (pν), because their mass fit each other to be a unity (see the definition of energy sharing and unity later in this section):

$$p + \nu \rightarrow p\nu$$

Each electron (e) shares energy with a photon (γ) as an electron unity (eγ), also because their mass fit each other to be a unity:

$$e + \gamma \rightarrow e\gamma$$

Proton unities (pν) and electron unities (eγ) are called base unities[5].

The light could not propagate because each photon bonded with an electron as a unity. The base unities also made the universe opaque (Cosmic Dark Age).

Physicists have proposed neutrons or neutrons' components as newly formed particles[1,4]. But neutron = proton + electron (p + e), which also agrees with the Simplicity Rule, will be proved by:

1) The nuclear fusion process below.
2) The beta decays[5] of some heavy and unstable nuclei produced by the nuclear fusion.
3) The formation of neutron stars (in the Burnt-Out section).

By then, the universe had expanded into many big chunks of matter (base unities), one of them was our Milky Way. And the big chunks of matter had also expanded into many smaller chunks of matter, one of which was our solar system.

In the centre of each chunk of matter, those base unities were so dense and hot that they began to fuse (nuclear fusion in the fusion centre), mainly through proton-proton chain reaction[6], shown as the following simplified steps, updated from my original version[5]:

1. Two proton unities and two electron unities share energy to form a hydrogen-2 nucleus called deuterium, releasing a high-energy neutrino (ν^+), a high-energy electron (e^+ or positron) and a high-energy photon (γ^+ or gamma ray):

$$2\,p\nu + 2\,e\gamma \rightarrow {}^2p\nu e\gamma + \nu^+ + e^+ + \gamma^+$$

The energy sharing concept comes from this fusion process:

$\nu + e + \gamma \rightarrow \nu^+ + e^+ + \gamma^+$, so that the energy in the produced deuterium (${}^2p\nu e\gamma$) must have been reduced (shared) to produce the high-energy neutrino, electron, and photon.

That is, *Energy sharing* is the process of forming a system with less energy than provided, plus the excess-energy: A + B = AB + excess-energy, based on the law of conservation of energy.

So, the newly formed system has an energy limit, and it will release excess-energy until it reaches its energy limit. Therefore, more concepts and their definitions:

Energy limit is the maximum energy limit of matter or a system in its situation.

Excess-energy is the energy that is over the energy limit.

Unity is matter or a system with its energy limit, like the deuterium (${}^2p\nu e\gamma$).

Free particles are matter or systems with excess-energy, like ν^+, e^+ and γ^+.

Unity Force is matter or a system's tendency of being unity, expressed as attracting while energy sharing in a unity or repelling while excess-energy releasing out of the unity, for example, nuclear fusion is unity force in action.

These concepts form the main foundation of *The Laws of Unity*[5].

2. The deuterium (${}^2p\nu e\gamma$) shares energy with another proton unity to form a helium-3 nucleus, releasing another high-energy photon (γ^+ or gamma ray):

$$^2p\nu e\gamma + p\nu \rightarrow {}^3p^2\nu e + \gamma^+$$

3. Two helium-3 nuclei share energy to form one helium-4 nucleus and release two proton unities to continue the process:

$$^3p^2\nu e + {}^3p^2\nu e \rightarrow {}^4p^2\nu^2 e + 2\,(p\nu)^+$$

4. The helium-4 nucleus, ${}^4p^2\nu^2e = 2({}^2p\nu e)$, becomes repelling while releasing the excess-energy mentioned above and moves out of the fusion centre to the outer core as the new unity, and the product of the fusion.
5. Or the helium-4 nucleus $2({}^2p\nu e)$ shares more energy with other nuclei or proton unities to form a heavier nucleus unity $n({}^2p\nu e)$, where atomic number $n > 2$, if the situation permits.
6. Therefore, in a newly formed nucleus unity from nuclear fusion, every electron shares energy with two protons and one neutrino as $n({}^2p\nu e)$, where the atomic number $n >= 2$. Although isotopes happen, this is the main composition. Thus, unity force replaces strong force and quantum chromodynamics[7].

7. Absent from nuclear fusion, a hydrogen nucleus has only one proton unity (pν).
8. Most fusion centres release their excess-energy (nuclear decay) by releasing high-energy neutrinos, photons, and electrons, producing the cosmic microwave background radiation:
   1) The high-energy neutrinos and photons (ν^+ and γ^+) carry their energy away directly, as part of the first light (invisible due to high energy).
   2) The high-energy electrons (e^+) transfer their energy to normal electron unities ($e\gamma$) that in turn transfer the energy to their bonded photons (no "annihilation"), producing gamma rays (γ^+), as another part of the first light:

$$e^+ + e\gamma \rightarrow 2\,e + \gamma^+$$

   The first light would become visible after the high-energy photons release some energy.
9. The rest, extra-large fusion centres could not release their excess-energy in the inner core but use it instead for energy sharing of heavier nuclei. Without repelling by excess-energy releasing, these extra-large fusion centres would become black holes with much stronger attracting unity forces.

In the above nuclear fusion process, mass does not change into energy, nor vice versa.

Mass and energy are not physical entities, but properties of matter, and independent of each other. The concept of mass-energy equivalence ($E=mc^2$)[8] is deemed as a misconception.

At this point, the rotation started by the Big Bang and then intensified by the unity force of nuclear fusion (instead of gravity), made the chunks into disks.

IV. Formation of Star Systems

Around 380,000 years after the Big Bang, while still expanding, the position of our solar system in the Milky Way was relatively settled. The centre of each disk was still the fusion centre, pulling most of the base unities toward the centre to form the star, still producing the cosmic microwave background radiation.

At the edge of each disk, some much smaller fusion centres were also pulling base unities toward them that eventually formed the planets, so that most of them have moons. The products of the nuclear fusions would move to the outer cores and then, billions of years later, form mantles and crusts of the planets.

So, inside the cores of the stars and their planets, proton unities and electron unities are attracting to form nuclei, while the newly formed helium-4 nuclei are repelling to move out. The net force of each fusion centre (or unity centre, like the sun) shows attraction because nuclear fusion (energy sharing) is the primary process.

The orbit of each planet was decided by its position on the disk edge of the star system; the position was initially set by the Big Bang and fundamentally established by unity force; the further the position on the edge, the further the orbit from the unity centre[5]. Therefore, unity force and inertia (the same unity force[5]) decide the orbit of each planet.

That is how the unity forces of the stars and planets jointly form the star systems.

V. Formation of Atoms and the Dawn of the Universe

At about the same time, out of the fusion centres in the disks of the star systems, the temperatures were eventually cool enough for the nuclei to capture electron unities, forming the first atoms and making the cosmos transparent:

1. Absent from nuclear fusion, each free proton unity attracts and shares energy with an electron unity in its orbit, forming a hydrogen atom: $(p\nu) + (e\gamma)$, producing most of the light elements in the universe.
2. Each of the helium-4 nucleus created in the fusion centres and moved out, shares energy with two electron unities in its orbit, forming a helium atom: $2(^2p\nu e) + 2(e\gamma)$, producing the rest of the light elements in the universe.
3. The heavier nuclei form atom unities the same way, with the same numbers of protons and electrons: $n(^2p\nu e) + n(e\gamma)$, where atomic number $n > 2$.

When getting excess-energy from the environment, like nearby fusion centres, the outermost electron unity ($e\gamma$) of an atom will oscillate out of the atom[5], becoming a free electron unity again, and in turn oscillating free its bonded photon to release the excess-energy, as light:

$$(e\gamma)^+ \rightarrow e + \gamma^+$$

together with the first light from nuclear fusion, bringing the dawn of the universe.

VI. Formation of Galaxies

By then, those extra-large fusion centres that could not release their excess-energy as a repelling force, with only the attracting force of the nuclear fusion, had become full-fledged black holes, attracting all the star systems around them, forming their respective galaxies.

So, I propose and predict:

1. Every galaxy is a unity, the ultimate unity with its ultimate unity force, with at least one black hole as the unity centre.
2. If there were more than one black hole in one galaxy, those black holes would eventually merge

into one, because they would be close enough to attract each other.

3. Unity force (instead of gravity) forms the hierarchical structure of each galaxy, making the black hole as its unity centre. Under a galaxy, each star becomes the unity centre of the star system. Under a star system, each planet is the unity centre of its moons. Then, each atomic nucleus is the unity centre of the atom. Inside the nucleus, every proton is the unity centre. Outside the nucleus, each electron is the unity centre of the electron unity ($e\gamma$).
4. The large-scale structures - the groups or clusters of galaxies - originate from the expansion of the universe (instead of gravity): the distribution of matter was random and uneven, although the universe on larger scales is relatively uniform.

Physicists have added gravity and gravitational collapse to the process, which is unnecessary and against the Simplicity Rule. Why would the process need gravity and gravitational collapse to pull particles together, since the particles were dense and hot in the first place when created? The high density and high temperature were perfect for nuclear fusion. Then, the force of nuclear fusion (unity force) keeps pulling particles together.

Some physicists have also added dark matter and dark energy to the process, which is also unnecessary and against the Simplicity Rule. Our theory is doing just fine without them, until observations (scientific rule 1) prove to us otherwise.

VII. The Burnt-Out Stars and Planets

After billions of years, in their fusion centres, some stars and most of the planets run out of their main fuel - the proton unities and electron unities - after making them into helium-4 nuclei $2(^2pve)$. Then the helium-4 nuclei became their main fuel, sharing more energy with each other to form heavier nucleus unities $n(^2pve)$, where atomic number $n > 2$.

1. As a star continues nuclear fusion of heavier nuclei, the fuels deplete gradually, the force of its nuclear fusion, and the force of inward attraction, reduces gradually, while the outward excess-energy releasing always lags, so that the outward pressure expands the star larger gradually, making it a red giant.

Then the fate of the star depends on its mass[9], whether being "massive" (about 5 or more times the mass of our Sun) or being "low or medium" (about 0.4 to 3.4 times the mass of our Sun).

1) *The Sun-Sized Stars:*[9]

When a medium size star (such as our Sun) reaches the red giant phase, its outer layers continue to expand, while the core contracts inward because the helium nuclei in the core continue to fuse into carbon.

The star will shed its outer layers and only about 20% of the star's initial mass remains. Then the star cools and shrinks until it is only a few thousand miles in diameter, becoming a white dwarf. With no fuel left to burn, the hot star radiates its remaining heat into space for billions of years, eventually becoming a cold dark mass, also called a black dwarf.

2) *The Massive Stars:*[9]

For stars that are about 5 or more times as massive as our Sun, after the outer layers of the star have swollen into a very big red giant, the core continues nuclear fusion after the formation of carbon, until the core becomes mostly iron. Then the fusion becomes harder because of iron's nuclear structure. The core temperature rises to over 100 billion degrees as the iron nuclei are crushed together, eventually causing a tremendous explosion called a supernova.

The intense pressure inside the supergiant causes the electrons to combine with the protons, forming neutrons ($p + e$). As a dense ball of neutrons that most likely remain intact after the supernova, the whole core of the star becomes a neutron star.

2. As planets are much smaller, their main fuel has long gone, and the nuclear fusion of heavier nuclei would stop gradually, leading to the current much cooler planets that we mostly see: the heavier elements moved out of the cores and became mantles and crusts, the previous fusion centres are still hot, with some unstable nuclei from the nuclear fusion going through beta decays and nuclear fissions, causing planetary quakes and volcanoes, some of them on Earth are extraordinary.

As the third planet from the sun, Earth is not too far, not too close, in a right position to have water mostly in liquid state, to nurture biological organisms and raise our human beings.

There should be some other planets in all the star systems that are as lucky as Earth.

VIII. Accelerating Expansion?

In 1998, two independent projects, the Supernova Cosmology Project and the High-Z Supernova Search Team, using distant type Ia supernovae to measure the expansion of the universe, discovered that objects in the universe are moving away from one another at an accelerating rate[1,4,10], which is unexpected and unexplained by the gravitational attraction of the matter in the universe.

Some physicists attribute this accelerated expansion to "dark energy" and "dark matter". But I can think of many other reasons:

1. The observed objects happened to be on the opposite side of their orbits moving away from us, and would eventually circle back, unless the observation samples were random and large

enough, and the observation time were long enough.

2. The observed objects were in an energy recession, so that their luminosities were dimming gradually. Again, sample size, randomization and observing duration matter.
3. In their distance calculation, the speed of light *c* is assumed as a constant, but physically and theoretically, the speed (and oscillation frequency) of photons must reduce gradually over long astronomical distances due to friction (refraction and diffraction), just like any other particle. Using a constant speed to estimate the reducing speed of light will cause the calculation of astronomical distance to be erroneous. That is, any equation using the speed of light as a constant will result in a slightly longer distance. For astronomical distances, it causes error.
4. As the speed and oscillation frequency of photons reduce gradually over astronomical distances, their wavelengths increase gradually, causing red shifting. So, the observed redshift may just be caused by the fixed astronomical distances, not by increased distances. Hence, contrast and repeating experiments and observations are needed.

IX. Conclusion

1. The universe is formed of four base particles[5]: proton, electron, neutrino, and photon, created from the Big Bang[1]. Immediately, a proton and a neutrino form a proton unity; an electron and a photon form an electron unity (base unities). Then, the unity force produced more elements from the two base unities.
2. In the early universe, light could not propagate because each photon bonded with an electron as a unity. The two base unities also made the universe opaque (Cosmic Dark Age).
3. No gravity, nor gravitational collapse, is needed to draw these base particles together because they were dense and hot in the first place when created. The high density and temperature were perfect for nuclear fusions, and the force of nuclear fusion (unity force) would keep pulling particles together.
4. In a newly formed nucleus unity from nuclear fusion, every electron shares energy with two protons and one neutrino: $n(^2p\nu e)$, where the atomic number $n >= 2$. Thus, unity force replaces strong force and quantum chromodynamics[7].
5. Neutron = (pe). In some heavy and unstable nuclei produced by nuclear fusion, their beta decays (electron emission and electron capture), as well as the formation of neutron stars, all prove that a neutron = (p + e).
6. When the universe was cool enough, absent from nuclear fusion, each free proton unity attracts and shares energy with an electron unity in its orbit, forming a hydrogen atom: $(p\nu) + (e\gamma)$, producing most of the light elements in the universe.
7. Each of the helium-4 nuclei created in the fusion centres and moved out, share energy with two electron unities in its orbit, forming a helium atom: $2(^2p\nu e) + 2(e\gamma)$, producing the rest of the light elements in the universe.
8. An atom is formed of the same numbers of protons and electrons sharing energy together: $n(^2p\nu e) + n(e\gamma)$, $n >= 2$; the same way as a hydrogen atom: $(p\nu) + (e\gamma)$.
9. The released excess-energy from the nuclear fusion centres produces the cosmic microwave background radiation. Most fusion centres with excess-energy releasing form stars and planets. In each fusion centre, the energy generated from energy sharing is always greater than the excess-energy released, so that the fusion centre can keep attracting (pulling) base unities to the core for nuclear fusion, showing a net force of attraction.
10. The rest, extra-large fusion centres with inner cores unable to release excess-energy as a repelling force, form black holes with much stronger attracting unity forces of their respective galaxies.
11. The orbit of each planet was decided by its position on the disk edge of the star system; the position was initially set by the Big Bang and fundamentally established by unity force; the further the position on the edge, the further the orbit from the unity centre. Therefore, unity force and inertia (the same unity force[5]) decide the orbit of each planet. That is how the unity forces of the stars and planets jointly form the star systems.
12. As the third planet from the sun, Earth is not too far, not too close, in a right position to have water mostly in liquid state, to nurture biological organisms and raise our human beings.
13. Unity force (instead of gravity) forms the hierarchical structure of each galaxy, making the black hole as its unity centre. Under a galaxy, each star becomes the unity centre of the star system. Under a star system, each planet is the unity centre of its moons. Then, each atomic nucleus is the unity centre of the atom. Inside the nucleus, every proton is the unity centre. Outside the nucleus, each electron is the unity centre of the electron unity ($e\gamma$).
14. The large-scale structures - the groups or clusters of galaxies - originate from the expansion of the universe (instead of gravity): the distribution of matter was random and uneven, although the universe on larger scales is relatively uniform.
15. The observations of "accelerating expansion" of the universe needs larger sample size, randomization, repetition and better calculation.

16. "Positron" here is re-defined as high-energy electron, not the original meaning of "positively charged electron". Electrons are either attracting while energy sharing in an atom unity or kinetically repelling while excess-energy releasing out of the unity[5]. The concepts of "oppositely charged electrons and protons", "positively charged electrons" and "annihilation" are deemed as misconceptions.

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The Role of Noncommutative Quantum Gravity in Galactic Dynamics and Dark Matter Phenomena

By Gang Lee

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The Role of Noncommutative Quantum Gravity in Galactic Dynamics and Dark Matter Phenomena

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Abstract- **This paper is based on the theory of noncommutative quantum gravity to interpret the observed gravitational effects caused by dark matter, such as dark matter halos and the flatness of the rotation curves of galaxies. In this work, we explore whether noncommutative quantum gravity where spacetime coordinates follow a noncommutative algebra can naturally reproduce dark matter-like gravitational effects. Our findings suggest that the self-interaction effects in noncommutative quantum gravity may provide an alternative explanation for dark matter-like gravitational effects, potentially reducing the need for exotic matter.**

I. Introduction

In the section 2, we briefly reviewed the theory of noncommutative quantum gravity. In the paper [1] [2], we introduce the theory of noncommutative quantum gravity. Papers [3-5] discuss the macroscopic effects of noncommutative quantum gravity, including how gravity operates within a noncommutative framework and its potential observational consequences. In the section 3, we explained how quantum gravity can replace dark matter to explain the observed effects of dark matter, such as dark matter halos and the flatness of the rotation curves of galaxies.

II. Noncommutative Quantum Gravity

In the paper [1] and paper [2], we introduce the theory of noncommutative quantum gravity. In this theory, we give the field function of gravity. It is a semiclassical graviton, it can be be interpreted as a particle with zero point vibration. Its form is a Dirac-δ function as follows

$$\xi^i(x,r) = \begin{cases} \xi^r = r + C^r(x)\exp(-\dfrac{r}{l_P}) \\ \xi^\theta = \theta(x) \\ \xi^\phi = \phi(x) \\ \xi^t = t + C^t(x)\exp(-\dfrac{|t|}{t_P}) \end{cases} \tag{2.1}$$

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The Lagrangian density is

$$\mathscr{L} = -\frac{\eta^{\mu\nu}}{2}\frac{\partial\xi^i(x,r)}{\partial x^\mu}\frac{\partial\xi^j(x,r)}{\partial x^\nu}\eta_{ij} \tag{2.2}$$

The energy-momentum tensor is

$$\begin{aligned} T_{\mu\nu} &= \eta_{\mu\nu}\mathscr{L} - \frac{\partial\mathscr{L}}{\partial(\partial^\mu\xi^i)}\partial_\nu\xi^i \\ &= -\frac{\eta_{\mu\nu}}{2}\partial^\lambda\xi^i\partial_\lambda\xi^j\eta_{ij} + \partial_\mu\xi^i\partial_\nu\xi^j\eta_{ij} \end{aligned} \tag{2.3}$$

The free field equation is a wave equation

$$\partial^\mu\partial_\mu\xi^i = 0 \tag{2.4}$$

The Green's function can be written as

$$\tilde{G}^i(k) = \begin{cases} \tilde{G}^r(k) = -\dfrac{1}{(k^r)^2}\cdot\delta\left(k^r - \dfrac{i}{l_P}\right) \\ \tilde{G}^\theta(k) = -\dfrac{1}{(k^\theta)^2} \\ \tilde{G}^\phi(k) = -\dfrac{1}{(k^\phi)^2} \\ \tilde{G}^t(k) = -\dfrac{1}{\omega^2}\cdot\delta\left(\omega - \dfrac{i}{t_P}\right) \end{cases} \tag{2.5}$$

In the general theory of relativity, the energy-momentum tensor of gravitational field itself is:

$$\begin{aligned} t_{\mu\nu} &= \frac{1}{8\pi G}\left(\frac{1}{2}\eta_{\mu\nu}R^{(1)} - R^{(1)}_{\mu\nu}\right) \\ &= \frac{1}{8\pi G\cdot C}\left(\frac{1}{2}\eta_{\mu\nu}\frac{\partial\xi^i}{\partial x^\kappa}\frac{\partial\xi_i}{\partial x_\kappa} - \frac{\partial\xi^i}{\partial x^\mu}\frac{\partial\xi_i}{\partial x^\nu}\right) \end{aligned} \tag{2.6}$$

Up to a factor of a constant, it is equal to Eq.[2.3]. It is a strong evidence to prove that the quantum field theory constructed in the paper [1] and paper [2] is classically equivalent to the general theory of relativity.

In the paper [3] and [4], we discussed the self-interaction of gravitational fields. In momentum space, the metric of the gravitational field with self-interaction can be written as follows

$$\begin{aligned} g_{\mu\nu}[\lambda(\xi)] &= \frac{\partial\lambda(\xi^{\alpha})}{\partial x^{\mu}}\frac{\partial\lambda(\xi^{\beta})}{\partial x^{\nu}}\eta_{\alpha\beta} \\ &= \frac{\partial\left(\xi^{\alpha}(x,X)\big|_{X=0}+\Delta\xi^{\alpha}\right)}{\partial x^{\mu}}\frac{\partial\left(\xi^{\beta}(x,X)\big|_{X=0}+\Delta\xi^{\beta}\right)}{\partial x^{\nu}}\eta_{\alpha\beta} \\ &\equiv g_{\mu\nu}[\,\xi\,]+g^{(1)}_{\mu\nu}+g^{(2)}_{\mu\nu} \end{aligned} \tag{2.7}$$

where

$$\begin{aligned} g_{\mu\nu}[\xi] = &\left[\int d^4k\left(ik_{\mu}C^{\alpha}(k)\exp(ikx)-ik_{\mu}\left(C^{\alpha}(k)\right)^{*}\exp(-ikx)\right)\right. \\ &\left.\cdot\int d^4k\left(ik_{\nu}C^{\beta}(k)\exp(ikx)-ik_{\nu}\left(C^{\beta}(k)\right)^{*}\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \end{aligned} \tag{2.8}$$

$$\begin{aligned} g^{(1)}_{\mu\nu} = 2\cdot&\left[\int d^4k\left(\frac{2|L_P(k)|}{1+ikL_P(k)}ik_{\mu}C^{\alpha}(k)\exp(ikx)-\frac{2|L_P(k)|}{1-ikL_P(k)}ik_{\mu}\left(C^{\alpha}(k)\right)^{*}\exp(-ikx)\right)\right. \\ &\left.\cdot\int d^4k\left(ik_{\nu}C^{\beta}(k)\exp(ikx)-ik_{\nu}\left(C^{\beta}(k)\right)^{*}\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \end{aligned} \tag{2.9}$$

$$\begin{aligned} g^{(2)}_{\mu\nu} = &\left[\int d^4k\left(\frac{2|L_P(k)|}{1+ikL_P(k)}ik_{\mu}C^{\alpha}(k)\exp(ikx)-\frac{2|L_P(k)|}{1-ikL_P(k)}ik_{\mu}\left(C^{\alpha}(k)\right)^{*}\exp(-ikx)\right)\right. \\ &\left.\cdot\int d^4k\left(\frac{2|L_P(k)|}{1+ikL_P(k)}ik_{\nu}C^{\beta}(k)\exp(ikx)-\frac{2|L_P(k)|}{1-ikL_P(k)}ik_{\nu}\left(C^{\beta}(k)\right)^{*}\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \end{aligned} \tag{2.10}$$

Denote

$$f(k) \equiv \frac{2|L_P(k)|}{1+ik_\mu L_P(k)}, \quad f^*(k) \equiv \frac{2|L_P(k)|}{1-ik_\mu L_P(k)} \tag{2.11}$$

Using the mean value theorem of definite integrals, we have

$$\begin{aligned} g_{\mu\nu}^{(1)} &= 2\cdot\left[\int d^4k\left(f(k)\cdot ik_\mu C^\alpha(k)\exp(ikx)\right) - d^4k\left(f^*(k)\cdot ik_\mu\left(C^\alpha(k)\right)^*\exp(-ikx)\right)\right] \\ &\quad\cdot\left[\int d^4k\left(ik_\nu C^\beta(k)\exp(ikx) - ik_\nu\left(C^\beta(k)\right)^*\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \qquad (2.12) \\ &= 2\cdot\left[f(\zeta_r)\cdot\int d^4k\left(ik_\mu C^\alpha(k)\exp(ikx)\right) - f^*(\zeta_r^*)\cdot\int d^4k\left(ik_\mu\left(C^\alpha(k)\right)^*\exp(-ikx)\right)\right) \\ &\quad\cdot\int d^4k\left(ik_\nu C^\beta(k)\exp(ikx) - ik_\nu\left(C^\beta(k)\right)^*\exp(-ikx)\right)\Bigg]\cdot\eta_{\alpha\beta} \end{aligned}$$

$$\begin{aligned} g_{\mu\nu}^{(2)} &= \left[\int d^4k\left(f(k)\cdot ik_\mu C^\alpha(k)\exp(ikx)\right) - d^4k\left(f^*(k)\cdot ik_\mu\left(C^\alpha(k)\right)^*\exp(-ikx)\right)\right] \\ &\quad\cdot\left[\int d^4k\left(f(k)\cdot ik_\mu C^\beta(k)\exp(ikx)\right) - d^4k\left(f^*(k)\cdot ik_\mu\left(C^\beta(k)\right)^*\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \qquad (2.13) \\ &= \left[f(\zeta_r)\cdot\int d^4k\left(ik_\mu C^\alpha(k)\exp(ikx)\right) - f^*(\zeta_r^*)\cdot\int d^4k\left(ik_\mu\left(C^\alpha(k)\right)^*\exp(-ikx)\right)\right] \\ &\quad\cdot\left[f(\zeta_r)\cdot\int d^4k\left(ik_\mu C^\beta(k)\exp(ikx)\right) - f^*(\zeta_r^*)\cdot\int d^4k\left(ik_\mu\left(C^\beta(k)\right)^*\exp(-ikx)\right)\right]\cdot\eta_{\alpha\beta} \end{aligned}$$

where $f(\zeta)$ is the mean value of $f(k)$, $f^*(\zeta^*)$ is the mean value of $f^*(k)$. The general static isotropic metric is:

$$ds^2 = g_{rr}dr^2 + r^2 d\theta^2 + r^2 \sin^2\theta d\phi^2 - g_{tt}dt^2$$

$$g_{rr} = \left[1 - \frac{2MG}{r}\right]^{-1}, \quad g_{tt} = \left[1 - \frac{2MG}{r}\right] \tag{2.14}$$

Denote

$$\Delta_r \equiv \frac{f(\zeta_r) + f(\zeta_r^*)}{2}, \qquad \Delta_t \equiv \frac{f(\zeta_t) + f(\zeta_t^*)}{2} \tag{2.15}$$

Then the metric $\mathbf{g}_{\mu\nu}$ of the general static isotropic gravitational field with self-interaction can be written as

$$ds^2 = (1+\Delta_r)^2 \cdot \left[1 - \frac{2MG}{r}\right]^{-1} dr^2 + r^2 d\theta^2 + r^2 \sin^2\theta d\phi^2$$

$$- (1+\Delta_t)^2 \cdot \left[1 - \frac{2MG}{r}\right] dt^2 \tag{2.16}$$

It can also be expressed in the equivalent isotropic form. By introducing a new radius variable ρ

$$r = \rho\,(1+\Delta_r)\left(1 + \frac{MG}{2\rho}\right)^2 \tag{2.17}$$

Then the isotropic form can be written as

$$ds^2 = (1+\Delta_r)^2 \cdot \left(1 - \frac{MG}{2\rho}\right)^4 (d\rho^2 + \rho^2 d\theta^2 + \rho^2 \sin^2\theta d\phi^2)$$

$$- (1+\Delta_t)^2 \cdot \left(\frac{1 - MG/2\rho}{1 + MG/2\rho}\right)^2 dt^2 \tag{2.18}$$

We can find a scale transformation $r \to \left[(1+\Delta_r)\cdot r\right]$. It means that the gravity with self-interaction at a distance of $\left[(1+\Delta_r)\cdot r\right]$ from the gravitational source is equal to the gravity of the inverse square law at a distance of r from the gravitational source.

Obviously, the strength of self-interaction depends on the function Δ_r. In the paper [5], we calculate the function Δ_r in coordinate space as follows:

$$\Delta_r \equiv F_r(r, M) \cdot \left[1 - \frac{2MG}{r}\right]^{1/2} \tag{2.19}$$

where

$$F_r(r, M)$$

$$= KMG \cdot \ln \frac{\left(\sqrt{r^2 + r} - \sqrt{(2MG)^2 + 2MG}\right) + \left(\sqrt{r(1 + 2MG)} - \sqrt{2MG(1 + r)}\right)}{\left(\sqrt{r^2 + r} - \sqrt{(2MG)^2 + 2MG}\right) - \left(\sqrt{r(1 + 2MG)} - \sqrt{2MG(1 + r)}\right)} \tag{2.20}$$

Notice that the maximum value of the function Δ_r is located at $r = 2.(2MG)$. Therefore, this function can explain the flatness of the rotation curves of galaxies.

III. Dark Matter and Macroscopic Effect of Non-Commutative Quantum Gravity

Given the challenges in detecting dark matter directly, alternative theories such as modifications to gravityparticularly those emerging from quantum gravityhave been explored as potential explanations for observed galactic rotation curves. If dark matter is understood as the self-interaction of gravitational field, then the observational phenomena related to dark matter can be explained by the theory of noncommutative quantum gravity, such as dark matter halos and the flatness of the rotation curves of galaxies. Let's discuss as follows:

To explain the flatness of the rotation curves of galaxies, the galaxy serving as the gravitational source for a star located at the edge of the galaxy can be considered as an equivalent mass point M. The equivalent mass means that for the star located at the edge of the galaxy, the gravity from M is equivalent to the gravity from total mass of the galaxy. From the equivalent mass M we get the Schwarzschild radius $r_s = 2MG$. Note that the Schwarzschild radius r_s of the equivalent mass M does not imply the event horizon of a black hole, but only represents a scale of length.

Then Eq.(2.20) can be written as

$$F_r(r, M) = \frac{r_s}{2} K \cdot \ln \frac{\left(\sqrt{r^2 + r} - \sqrt{r_s^2 + r_s}\right) + \left(\sqrt{r(1 + r_s)} - \sqrt{r_s(1 + r)}\right)}{\left(\sqrt{r^2 + r} - \sqrt{r_s^2 + r_s}\right) - \left(\sqrt{r(1 + r_s)} - \sqrt{r_s(1 + r)}\right)} \tag{3.1}$$

For example, in the case of $r_s = 100$, the curve of the function δ_r is

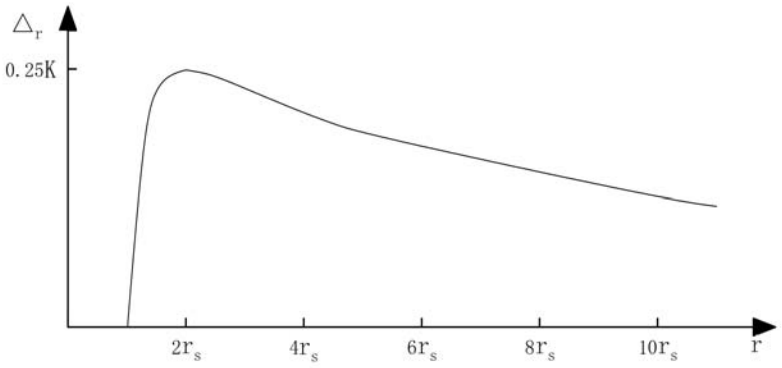

Figure 1: function Δ_r

The maximum of the function Δ_r is located at $r = 2r_s$. In the interval $r \in (r_s, 2r_s]$, the effect of self-interaction of gravitational field continues to increase and reaches its maximum at $r = 2r_s$. Therefore, in the interval $r \in (r_s, 2r_s]$, the rotation curves can remain flat with increasing distance. The flatness of the rotation curves is not due to the modified Newtonian dynamics in weak-field, nor is it due to the gravitational effect of dark matter, but rather due to the continuous enhancement of self-interaction in the gravitational field. If $r > 2r_s$, the self-interaction effect start to weaken, and due to the inverse square law, the velocity of stars located at the edge of the galaxy start to rapidly decrease with increasing distance. By superimposing the calculated rotation curve of the galaxy in the absence of dark matter with the curve of the function Δ_r in Figure 1, we can obtain the flatness of the rotation curves of galaxies without the need for dark matter halo, consistent with the observed rotation curve of the galaxy. This offers a reasonable explanation for the flatness of the rotation curves of galaxies without dark matter. In this way we can conclude that the dark matter we observe is distributed near $r = 2r_s$. The self-interaction gradually strengthen before $r = r_s$, then decrease with $r > 2r_s$, formed the dark matter halo.

In the case of galaxy cluster CL0024+17, the map of dark matter in the galaxy cluster is actually the macroscopic effect of self-interaction of the gravitational field of the galaxy cluster. Due to the disk like shape of galaxy clusters, dark matter is distributed in a circular ring pattern. According to the discussion in this paper, this distribution pattern of dark matter is universal. Another similar situation is the Milky Way. The rotation curve of the central part of the Milky Way follows the inverse square law, so there is no dark matter in the central region. Dark matter appears from the base of the spiral arms in the Milky Way galaxy, this is consistent with the self-interaction curve shown in Figure 1. Therefore, on the plane of galactic disk, the dark matter is also distributed in a circular ring pattern. In 3D space, the dark matter in the Milky Way is distributed ellipsoidal surface around the entire galaxy. The dark matter

located in the central part of the galaxy cluster CL0024+17 is also due to the same reason. The gravitational fields of each galaxy in the central region of the galaxy cluster CL0024+17 have their own self-interactions, which superimpose to form a dark matter halo in the central region of the galaxy cluster.

Due to the gravitational effect of dark matter being the self-interaction effect of the gravitational field of baryonic matter, this indicates that the density distribution of dark matter in galaxy clusters is consistent with that of baryonic matter.

In the case of bullet cluster 1E0657-56, the dark matter images of galaxy cluster obtained from gravitational lensing effect and X-ray observations can be interpreted as the gravitational fields between two separating galaxy clusters cancel each other out, the effects of self-interaction also cancel each other out. Therefore, no dark matter was observed between galaxy clusters. Dark matter is distributed on the outer side of two separating galaxy clusters.

The self-interaction of the gravitational field can also explain the universal enhancement of the gravitational lensing effect observed of galaxy clusters, which is consistent with dark matter theory. According to the calculations in the paper [5], the gravitational effect of self-interaction has almost no gravitational redshift, which is a difference from dark matter theory.

From Figure 1, it can be seen that the attenuation of self-interaction of the gravitational field begins after $r > 2r_s$, but the attenuation rate is very small, therefore the effect of self-interaction can be understood as long-range interaction, although the effect of self-interaction becomes extremely weak at great distances. Maybe it also can be explain the Pioneer anomaly in the solar system.

IV. Conclusion

Our findings suggest that the self-interaction effects in noncommutative quantum gravity may provide an alternative explanation for dark matter-like gravitational phenomena, potentially offering a simpler theoretical framework. From the above analysis, we can see that the self-interaction effect of gravitational field may explain the gravitational effects caused by dark matter, such as dark matter halos and the flatness of the rotation curves of galaxies. The approach in this paper does not require modification of the inverse square law and can predict the location of dark matter. However, further work is required to compare this approach with observational data. Due to the difficulty in accurately determining the mass distribution of galaxies, the equivalent mass is also difficult to accurately determine, and thus the Schwarzschild radius r_s of the equivalent mass M is also difficult to accurately determine. At present, the Schwarzschild radius r_s of the equivalent mass M can only be roughly determined through observation data of dark matterThe location where dark matter is most concentrated is $r = 2r_s$the location where the rotation curve of the galaxy begins to descend is $r = 2r_s$. More detailed galaxy observation data will be available to verify the approach in this paper.

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The Nature of the Electron

By Changming Wang

Abstract- Unity is defined as matter or a system with its maximum energy limit. In an atom unity, electrons are attracting while energy sharing. Out of the unity, electrons are kinetically repelling while excess-energy releasing gradually. The concept of a specific “electric charge” is a misconception, also is the concept of “oppositely charged” electrons and protons. Matter’s energy is scalar, not vector, any “antimatter” is a misconception, including the concept of a “positively charged electron”, and the idea of “annihilation”. The Big Bang created four base particles: proton (p), electron (e), neutrino (ν), and photon (γ). The electron usually shares energy with a photon as an electron unity (eγ). Electrons move to be dynamic unity, expressed as two distinct types of oscillations: 1) Electrons of an atom unity oscillate around their nucleus, attracting while energy sharing. Each electron’s orbit is the equilibrium of its unity force; 2) Outside electric forces can break free those outermost electrons from the atom unities of a conductor, oscillate them away, align and energize them, forming stronger electron waves with magnetic effects, and simultaneously cause them to flow along the potential difference as electric currents.

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The Nature of the Electron

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Abstract- Unity is defined as matter or a system with its maximum energy limit. In an atom unity, electrons are attracting while energy sharing. Out of the unity, electrons are kinetically repelling while excess-energy releasing gradually. The concept of a specific "electric charge" is a misconception, also is the concept of "oppositely charged" electrons and protons. Matter's energy is scalar, not vector, any "antimatter" is a misconception, including the concept of a "positively charged electron", and the idea of "annihilation". The Big Bang created four base particles: proton (p), electron (e), neutrino (ν), and photon (γ). The electron usually shares energy with a photon as an electron unity (eγ). Electrons move to be dynamic unity, expressed as two distinct types of oscillations: 1) Electrons of an atom unity oscillate around their nucleus, attracting while energy sharing. Each electron's orbit is the equilibrium of its unity force; 2) Outside electric forces can break free those outermost electrons from the atom unities of a conductor, oscillate them away, align and energize them, forming stronger electron waves with magnetic effects, and simultaneously cause them to flow along the potential difference as electric currents. Electricity is the synchronized repelling force of the electric currents, in which each electron transfers its excess-energy to an electrical device or to its bonded photon causing light. After transferring all its excess-energy, the electron joins in an atom unity that lost an electron previously, attracting while energy sharing again. Nuclear fusion is the unity force in action, creating nuclei so that every electron shares energy with two protons and one neutrino as $n(^2p\nu e)$, where atomic number n >= 2. Thus, unity force replaces strong force and quantum chromodynamics. Beta decay is also unity force in action: in the unstable nucleus unities, outside initial energy can break out a neutrino and an electron (electron emission) as excess-energy; or break in an electron (electron capture) and break out a neutrino as excess-energy; leaving most of the original particles to share energy as new nucleus unities. Thus, unity force also replaces weak force. Electromagnetism is electron waves showing magnetic effects while releasing excess-energy as photon waves. Therefore, electromagnetism is the unity force of free electrons, and should be called electronism. Magnetic effects result from stronger electron waves aligning weaker electron waves. After aligned, they become attractive to each other, because aligning is energy sharing. Chemistry is the unity force in action, where electrons are action agents for energy sharing, excess-energy releasing, and energy transferring in atom and molecule unities.

Keywords: electron, mass, energy, unity, unity force, energy sharing, excess-energy releasing, nuclear fusion, beta decay, nuclear fission, electromagnetism, electricity, chemistry.

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I. Introduction

The electron was discovered in 1897 by physicist J.J. Thomson[1]when studying cathode rays, which he initially called corpuscles.

According to current knowledge[1], the electron is a subatomic particle with a negative electric charge, circling an atom's central nucleus formed by positively charged protons and electrically neutral particles called neutrons. This circling is called orbitals that can change (quantum leap) with energy change of the electrons, that in turn cause photon absorptions or emissions.

The electron is an elementary particle[1], without known components or substructure, belonging to the lepton particle family, having an intrinsic angular momentum (spin) of a half-integer value. The rest mass of the electron is 9.11×10^{-31} kg, which is only 1/1,836 the mass of a proton.

Electrons play an essential role in numerous physical phenomena[2], such as electricity, magnetism, chemistry, and thermal conductivity; they also participate in electromagnetic, and weak interactions. Since an electron has charge, it has a surrounding electric field that generates a magnetic field. Electrons radiate or absorb energy in the form of photons when they are accelerated.

Electrons are involved in many applications[2], such as frictional charging, electrolysis, electrochemistry, battery technologies, electronics, welding, cathode-ray tubes, photoelectricity, photovoltaic solar panels.

Chemistry and nuclear physics involve electrons interacting with other subatomic particles[2]. The exchange or sharing of the electrons between two or more atoms is the main cause of chemical bonding. Coulomb's law calculates the amount of force between two electrically charged particles at rest.

But the electron has not been fully and correctly understood. Certain misconceptions (see later sections) have been prevalent since its discovery. Therefore, the nature of the electron needs a more profound and distinct perspective, from the fundamental principles of matter and the origin of the electron, as follows.

II. The Principles of Matter – The Laws of Unity

Here are the Principles of Matter or the Laws of Unity, updated from my original version[3,4]:

1. Matter is any substance that has mass and energy. Matter's energy is scalar, not vector.
2. Energy limit (potential energy Ep) is matter's maximum energy limit in its situation.
3. Excess-energy (kinetic energy Ee) is the energy that is over the energy limit.
4. Unity is matter or a system with its energy limit.
5. Free particles are matter or systems with excess-energy.
6. Unity force (Fu) is matter's tendency of being unity, expressed as attracting while energy sharing in a unity or repelling while excess-energy releasing out of the unity.
    1) Matter attracts other matter to share energy while its energy is below its energy limit (attracting while energy sharing) until being a new unity.
    2) A free particle repels other matter while releasing its excess-energy (repelling while excess-energy releasing) until being unity.
    3) Breaking a unity requires strong enough initial energy. Then, a new unity begins in the new situation. The more energy is shared in a unity, the more initial energy is required to break the unity.
7. *Dynamic unity:* matter or a system moves to be unity, expressed as two distinct types of oscillations:
    1) Matter of a unity oscillates around (orbits) the centre of the unity (unity centre) to share energy, like an electron orbits its atomic nucleus, or a planet orbits its star. The orbit is the equilibrium of its unity force.
    2) A free particle oscillates away or about the energy source to release its excess-energy, forming particle waves.
        i. Almost massless, a photon or a neutrino oscillates away as light, its visibility depending on its excess-energy[5].
        ii. With larger mass, an electron oscillates away or about the energy source, showing magnetic effects, and in turn oscillates away a photon as light.

Here, mass and energy must be defined clearly:

1. Mass is matter's unity mass (Mu), also called rest mass (m), because "rest" means in a unity.
2. Energy is matter's total energy E: E = Ep + Ee, where Ep is energy limit or potential energy, and Ee is kinetic excess-energy. When in unity, Ee = 0.
3. Matter's total energy E expresses as its unity force Fu, so that E >= Fu >= Mu:
    1) *At the lowest level:* when in unity, matter's unity force Fu equals its unity mass Mu[3]: Fu = Mu.
    2) At the highest level, Fu = E, which shows the attracting force of nuclear fusion of a black hole. Albert Einstein proposed that: $E = mc^2$ [6], where c is the speed of light, although due to the below two points, this equation is questionable.
4. Mass does not change into energy, nor vice versa, not even in nuclear fusion or nuclear fission (see the Nuclear Fusion and Nuclear Fission sections).
5. Mass and energy are not physical entities, but properties of matter, and independent of each other. The concept of mass-energy equivalence ($E = mc^2$) is deemed as a misconception.

III. The Origin of the Electron

The Big Bang created four base particles[3]: proton, electron, neutrino, and photon, in descending order of mass.

Then, each proton (p) shares energy with a neutrino (ν) as a proton unity (pν), because their mass fit each other to be a unity:

$$p + \nu \rightarrow p\nu$$

Each electron (e) shares energy with a photon (γ) as an electron unity (eγ), also because their mass fit each other to be a unity:

$$e + \gamma \rightarrow e\gamma$$

Proton unities and electron unities are called base unities.

So, I propose and summarize:

1. The Big Bang created the electron as one of the four base particles.
2. An electron tends to be in an electron unity (eγ), where the electron is the unity centre.
3. Because of its mass, and its unity with a photon, the electron is a perfect action agent in nuclei, atoms, and molecules.

IV. The Electron in Nuclear Fusion

In the nuclear fusion centre, those base unities are so dense and hot, and their energy limits are raised so high, they become attracting and energy sharing. That is, nuclear fusion is unity force in action, mainly through the proton-proton chain reaction[7], shown as the following simplified steps, updated from my original version[3]:

1. Two proton unities and two electron unities share energy to form a hydrogen-2 nucleus called deuterium, releasing a high-energy neutrino (ν^+), a high-energy electron (e^+ or positron) and a high-energy photon (γ^+ or gamma ray):

$$2\,p\nu + 2\,e\gamma \rightarrow {}^2p\nu e\gamma + \nu^+ + e^+ + \gamma^+$$

2. The deuterium $^{2}p\nu e\gamma$ shares energy with another proton unity to form a helium-3 nucleus, releasing another high-energy photon (γ^{+} or gamma ray):

$$^{2}p\nu e\gamma + p\nu \rightarrow {}^{3}p^{2}\nu e + \gamma^{+}$$

3. Two helium-3 nuclei share energy to form one helium-4 nucleus and release two proton unities to continue the process:

$$^{3}p^{2}\nu e + {}^{3}p^{2}\nu e \rightarrow {}^{4}p^{2}\nu^{2}e + 2\,(p\nu)^{+}$$

4. The helium-4 nucleus, $^{4}p^{2}\nu^{2}e = 2(^{2}p\nu e)$, becomes repelling while releasing the excess-energy mentioned above and moves out of the fusion centre to the outer core as the nucleus unity, and the product of the fusion.
5. Or the helium-4 nucleus $2(^{2}p\nu e)$ shares more energy with other nuclei or proton unities to form a heavier nucleus unity: $n(^{2}p\nu e)$, where atomic number $n > 2$, if the situation permits.
6. Therefore, in a newly formed nucleus unity from nuclear fusion, every electron shares energy with two protons and one neutrino: $n(^{2}p\nu e)$, where the atomic number $n >= 2$. Although isotopes happen, this is the main composition.
7. Absent from nuclear fusion, a hydrogen nucleus has only one proton unity ($p\nu$).

So, I propose and summarize:

1. Nuclear fusion is the unity force in action, creating nuclei so that every electron shares energy with two protons and one neutrino as $n(^{2}p\nu e)$, where atomic number $n >= 2$. Thus, unity force replaces strong force and quantum chromodynamics[8].
2. Excess-energy releasing is an important aspect of unity force, to maintain the newly produced unities. Besides being an energy sharing agent, the electron is also an excess-energy releasing agent (e^{+}) in nuclear fusion.
3. The "positron" here is re-defined as the high-energy electron, not the original meaning of "positively charged electron". According to the Principles of Matter, matter's energy is scalar, not vector. Any "antimatter" is a misconception, including the concept of a "positively charged electron", and the idea of "annihilation".
4. In the above nuclear fusion process, mass does not change into energy, nor vice versa.

V. The Electron in Atom Formation

Around 380,000 years after the Big Bang, out of the fusion centres in the disks of the star systems, the temperatures were eventually cool enough for the nuclei to capture electron unities ($e\gamma$), forming the first atoms and making the cosmos transparent:

1. Absent from nuclear fusion, each free proton unity attracts and shares energy with an electron unity in its orbit, forming a hydrogen atom: $(p\nu) + (e\gamma)$.
2. Each of the helium-4 nucleus created in the fusion centres and moved out, shares energy with two electron unities in its orbit, forming a helium atom: $2(^{2}p\nu e) + 2(e\gamma)$.
3. The heavier nuclei form atom unities the same way, with the same numbers of protons and electrons: $n(^{2}p\nu e) + n(e\gamma)$, where atomic number $n > 2$.

VI. The Electron in Beta Decay

As stated in the last section, nuclei of helium and heavier atoms are created in nuclear fusion centres by every electron sharing energy with two protons and one neutrino: $n(^{2}p\nu e)$, where atomic number $n >= 2$.

In a nucleus $n(^{2}p\nu e)$, every (pe) is shown as a neutron. That is, a neutron $= (p + e)$, which will be proved as follows.

According to the Laws of Unity, breaking a unity requires strong enough initial energy.

In the case of beta decay, the strong enough initial energy mostly comes from random sources of the environment (besides manually induced in nuclear fission), including high-energy photons (gamma rays, X-rays), cosmic rays, high-energy neutrinos or high-energy electrons from other beta decays.

In those unstable nuclei (easily broken unities), the initial energy causes two types of beta decays:

1. *Electron emission*[9]. Initial random energy breaks free an electron and a neutrino shared with two protons, causing one more proton and one less neutron:

$$pe\nu \rightarrow p + e^{+} + \nu^{+}$$

The broken-free neutrino (ν^{+}) carries the excess-energy away as invisible light. The broken-free electron (e^{+} or positron) transfers the excess-energy to a normal electron unity ($e\gamma$), producing a gamma ray or X-ray (γ^{+}), depending on the energy level.

An example of electron emission is the decay of carbon-14 into nitrogen-14 with a half-life of about 5,730 years[10].

Carbon-14 has 6 protons and 8 neutrons in its nucleus ($^{14}p^{6}\nu^{8}e$). In this decay process, carbon-14 ($_{6}C$) has a neutrino and an electron broken free with high energy, adding one proton and reducing one neutron, producing nitrogen-14 ($_{7}N$), that has 7 protons and 7 neutrons ($^{14}p^{5}\nu^{7}e$):

$$(^{14}p^{6}\nu^{8}e) \rightarrow (^{14}p^{5}\nu^{7}e) + \nu^{+} + e^{+}$$

In the produced nitrogen-14, $7(p) = {}_{7}N$, and $7(pe) = 7$ neutrons; the high-energy neutrino ν^{+} is an invisible light particle in its beginning, and the high-

energy electron e^+ transfers its high-energy to an electron unity ($e\gamma$), producing another invisible light γ^+.

The atomic number is increased because the periodic table only counts protons.

2. *Electron capture*[11]. Initial random energy can also energize an electron in the orbit of an unstable nucleus. The energized orbiting electron can break the unity of its nucleus, forming a new unity with two protons, causing one less proton and one more neutron:

$$e^+ + p\nu \rightarrow pe + \nu^+$$

releasing a high-energy neutrino ν^+ as excess-energy and invisible light.

An example of electron capture[11] is the decay of aluminium-26 into magnesium-26 with a half-life of about 717,000 years.

Aluminium-26 has 13 protons and 13 neutrons ($^{26}p^{13}\nu^{13}e$). In this decay process, one high-energy electron joins a nucleus of aluminium-26 ($_{13}Al$), reducing one proton and adding one neutron, making it into magnesium-26 ($_{12}Mg$), that has 12 protons and 14 neutrons ($^{26}p^{12}\nu^{14}e$):

$$(^{26}p^{13}\nu^{13}e) + e^+ \rightarrow (^{26}p^{12}\nu^{14}e) + \nu^+$$

In the produced magnesium-26, 12(p) = $_{12}Mg$, and 14(pe) = 14 neutrons. The high-energy neutrino ν^+ is the released and transferred excess-energy as invisible light.

The atomic number is decreased because the periodic table only counts protons.

So, I propose and summarize:

1. Beta decay is also unity force in action: in the unstable nucleus unities, outside initial energy can break out a neutrino and an electron (electron emission) as excess-energy; or break in an electron (electron capture) and break out a neutrino as excess-energy; leaving most of the original particles to share energy as new nucleus unities. Thus, unity force also replaces weak force[12].
2. In beta decays, as energy sharing agents, as well as excess-energy releasing and transferring agents, electrons maintain the newly produced unities.
3. As stated in the last section, the concept of a "positively charged electron" is a misconception. Beta decays should be categorized into electron emission and electron capture, instead of "negative or minus" and "positive or plus".

VII. The Electron in Nuclear Fission

Nuclear fission is also a type of beta decay, where strong enough initial energy breaks an unstable nucleus unity, leading to new unities while releasing excess-energy. The released excess-energy can cause chain reactions, if situations permit.

A famous example is U-235 ($_{92}U$) decaying into Kr-92 ($_{36}Kr$) and Ba-141 ($_{56}Ba$)[13].

Uranium-235 has 92 protons and 143 neutrons ($^{235}p^{92}\nu^{143}e$). In this decay process, one high-energy neutron $(pe)^+$ is induced into the nucleus of uranium-235 ($_{92}U$), breaking it into two smaller nuclei: 1) Krypton-92 ($_{36}Kr$), that has 36 protons and 56 neutrons ($^{92}p^{35}\nu^{56}e$); and 2) Barium-141 ($_{56}Ba$), that has 56 protons and 85 neutrons ($^{141}p^{55}\nu^{85}e$); and releasing three more high-energy neutrons $(pe)^+$ and three high-energy neutrinos ν^+:

$$(^{235}p^{92}\nu^{143}e) + (pe)^+ + \nu^+ \rightarrow (^{236}p^{93}\nu^{144}e) \rightarrow$$

$$(^{92}p^{35}\nu^{56}e) + (^{141}p^{55}\nu^{85}e) + 3\,(pe)^+ + 3\,\nu^+$$

The produced 3 $(pe)^+$ and 3 ν^+ are the released and transferred excess-energy, which will cause chain reactions if situations permit.

So, I propose and summarize:

1. In nuclear fission, the released energy comes from the potential energy of the source atoms, not from their mass.
2. The source unstable nuclei have stored large amounts of potential energy when created from nuclear fusion, which makes them unstable.
3. The produced Kr-92 and Ba-141 also have enough potential energy to be unstable and radioactive, and can beta decay into smaller and more stable atoms while releasing more high-energy electrons, neutrinos, and photons.

VIII. The Electron in Electromagnetism

According to current knowledge, electromagnetism or electromagnetic radiation[14] is the flow of energy at the speed of light through space or a material medium in the electric and magnetic fields that make up electromagnetic waves such as radio waves, visible light, and gamma rays. In such a wave, electric and magnetic fields are mutually linked with each other at right angles and perpendicular to the direction of motion. An electromagnetic wave is characterized by its intensity and the frequency of the electric and magnetic fields. In quantum theory, electromagnetic radiation is the flow of photons through space.

According to the Principles of Matter, electromagnetic radiation is just electron waves releasing excess-energy as photon waves.

In an electric field or a conductor, when electrons get excess-energy from an electric source that has a potential difference (voltage) for direction of motion, they oscillate away from the energy source (causing wave-particle duality) as electron waves with

magnetic effects (wave property), perpendicular to the simultaneously caused electric current (particle property), and in turn oscillating away their bonded photons as light, at right angles from the electrons:

1. The electrons oscillate away from their energy source (the electric source) as far away as possible, which is perpendicular from the direction of the simultaneous electric current.
2. The photons also oscillate away from their energy source (the electrons) as far away as possible, which is at right angles from the electrons. That is why the magnetic waves (photon waves actually) are at right angles from the electron waves.

So, I propose and summarize:

1. In materials without outside forces:
   1) Most electrons are in atom unities. For the rest, occasional free electrons, their waves are random and cancel each other out without magnetic effects.
   2) Some materials, like iron, have more free electrons that can be aligned, showing some magnetic effects. A magnet has many more free electrons that are already aligned when created.
2. In an electrical conductor, outside forces can break free the outermost electrons, align and intensify their waves, and form electric currents simultaneously.
3. These aligned and intensified electron waves in turn oscillate away the photons bonded with the electrons, causing photon waves (light).
4. Magnetic effects result from stronger electron waves aligning weaker electron waves. After aligned, they become attractive to each other, because aligning is energy sharing. For example, a magnet or an electric source that has stronger electron waves align and then attract small iron pieces that have weaker electron waves.
5. Electromagnetic radiation is electron waves showing magnetic effects while releasing excess-energy as photon waves. So, electromagnetism is the unity force of free electrons, and should be called electronism.
6. Therefore, there are no such things as magnetism, magnetic fields, or magnetic waves. They are just electron fields with electron waves releasing excess-energy as photon waves.

IX. Electrical Conductor, Insulator, Currents, and Electricity

An electrical conductor is: 1) a material, usually a metal, whose outermost electron of any atom can be easily broken free by an electric force; 2) an electrolyte with many free electrons, like battery electrolyte or organic tissues; or 3) a state of plasma filled with free electrons.

On the other hand, an electrical insulator is a material, like plastic, whose outermost electron of any atom cannot be easily broken free by an electric force.

When in an atom unity, electrons oscillate around their nucleus, attracting while energy sharing. Outside electric forces can break free those outermost electrons from the atom unities of a conductor, oscillate them away (causing wave-particle duality), align and energize them, forming stronger electron waves with magnetic effects (the wave property), and simultaneously cause them to flow along the potential difference as electric currents (the particle property).

Electricity is the synchronized repelling force of the electric currents, in which each electron transfers its excess-energy to an electrical device or to its bonded photon causing light.

After transferring all its excess-energy, the electron joins in an atom unity that lost an electron previously, attracting while energy sharing again.

The free electron's excess-energy is kinetically repelling and gradually reducing. The concept of an electron having a specific "electric charge" is a misconception. The concepts of "negative" or "positive" charges are also misconceptions.

X. Anode and Cathode to High-End and Low-End

As stated above, electron waves (with magnetic effects) and electric currents happen simultaneously, and the currents flow from high energy to low energy.

For indicating the directions of electrical currents, I suggest that, instead of using Anode and Cathode, we should use:

1. *High-end (+):* the end with more energetic and repelling electrons, hence the high kinetic (voltage) end.
2. *Low-end (–):* the end with less energetic and repelling electrons, hence the low kinetic (voltage) end.

XI. The Electron In Chemistry

Chemistry is the study of electron actions in atoms and molecules. It is also the study of breaking original unities and forming new unities in new situations. Therefore, chemistry is the unity force in action, where electrons are action agents for energy sharing (electron sharing or chemical bonding), excess-energy releasing, and energy transferring in atom and molecule unities.

1. *Electrons in Molecules: As Energy-sharing Agents*

The process of hydrogen burning into water, updated from my original version[4], is a chemical reaction:

$$2H_2 + O_2 \rightarrow 2H_2O + \text{energy (light and heat)}$$

But if we look deeper, we see that any chemical reaction is just a physical process.

a) The Reactants - the Hydrogen (H-H) and Oxygen (O=O) Molecules

Chemically, a single covalent bond bonds two hydrogen atoms; a double bond bonds two oxygen atoms.

Physically, the reactants were unities in their situation, the bonds being shared electrons as shared energy:

1) The two hydrogen atoms share energy by sharing the only two electrons between them to be a molecule unity (H:H).
2) The two oxygen atoms also share energy by sharing two pairs of electrons (4 electrons) to be a molecule unity (O::O).

b) Ignition and Bond Breaking

Strong enough energy (a spark or flame) is required to break the bonds of the hydrogen and oxygen molecule unities:

Chemically, the ignition energy breaks the H-H bonds in hydrogen molecules, and the O=O bond in the oxygen molecule; the molecules become individual atoms.

Physically, from the ignition energy, the sharing electrons in the molecule unities get excess-energy and oscillate away as free electrons (e^+), freeing up H atoms and O atoms (+sign indicating high energy and repelling; the ignition also provides more free electrons):

$$H{:}H \rightarrow 2\,H + 2\,e^+$$

$$O{::}O \rightarrow 2\,O + 4\,e^+$$

c) Bond Formation

Chemically, the free oxygen and hydrogen atoms form new bonds to create water molecules (H-O-H): each oxygen atom forms bonds with two hydrogen atoms. The process releases more energy than was required to break the original bonds, keeping the process going.

Physically, an increased energy limit by the ignition energy gave the free hydrogen and oxygen atoms the chance to share energy by sharing two pairs of electrons, forming the H:O:H unity in the new situation, and producing excess-energy:

$$4\,H + 2\,O + 8\,e^+ \rightarrow 2\,H{:}O{:}H + 8\,e^+$$

1) The newly formed free H:O:H molecules (water vapor) become repelling while releasing the excess-energy, causing more heat.
2) The free electrons (e^+) can also be used elsewhere (for example, battery energy in fuel cells), or transfer their excess-energy to their bonded photons (γ) and oscillate them away as light (γ^+):

$$e^+ + \gamma \rightarrow e + \gamma^+$$

3) The excess-energy keeps the process going if there are more H:H and O::O.

This process proves that electrons are energy-sharing agents in a molecule. Before the reaction, the atoms share energy by sharing electrons in their molecule unities. In the reaction, the atoms release the freed-up electrons as excess-energy.

2. *Electrons in Molecules: As Excess-energy-releasing Agents*

Before a chemical reaction, any reactants are unities. According to the Principles of Matter or the Laws of Unity[3]: to break a unity, strong enough initial energy is required, although in some situations, the reactants provide the initial energy, for example, in the following chemical reaction:

$$H\text{-}Cl + Na\text{-}O\text{-}H \rightarrow H\text{-}O\text{-}H + Na\text{-}Cl$$

1) when dissolved into water, the reactants H-Cl and Na-O-H release their potential energy:

$$H{:}Cl + 2\,H{:}O{:}H \rightarrow H{\cdot}H{:}O{:}H + Cl{\cdot}H{:}O{:}H + 2\,e^+$$

$$Na{:}O{:}H + 2\,H{:}O{:}H \rightarrow Na{\cdot}H{:}O{:}H + H{:}O{:}H{\cdot}O{:}H + 2\,e^+$$

The releasing of high-energy electrons e^+ as excess-energy causes water vapor and makes the solution electrically conductive.

2) $Cl{\cdot}H{:}O{:}H + Na{\cdot}H{:}O{:}H \rightarrow Na{:}Cl + 2\,H{:}O{:}H$

The pair of electrons in the produced Na:Cl are easily broken free, causing the solution to be more electrically conductive.

3. *Electrons in Molecules: As Energy-transferring Agents*

1) *Batteries*

An electrochemical battery[15,16] produces electricity by connecting two different metals in a chemical substance called an electrolyte. A chemical reaction between the metals and the electrolyte frees more and higher energy electrons in one metal than in the other[17].

The metal that frees more and higher energy electrons becomes the high voltage end (high-end), and the other metal becomes the low voltage end (low-end).

When an electrical conductor (wire) connects one end of the battery to the other, electrons flow through the wire from high-end to low-end.

When an electrical device, such as a light bulb, is connected along the wire, the electricity can do work as it flows through the wire and the light bulb from the high-end to the low-end of the battery.

For example, one kind of battery is based on the redox reaction[16]:

When a piece of zinc metal (Zn) is immersed in an aqueous solution of copper sulfate ($CuSO_4$), dark-coloured copper metal will collect on the surface of the zinc metal and the blue coloured Cu ion disappears from the solution. The solution now contains zinc ions, as represented below:

$$Zn + Cu{:}SO_4 \longrightarrow Zn{:}SO_4 + Cu$$

Where Zn is oxidized to $Zn{:}SO_4$ while $Cu{:}SO_4$ is reduced to Cu. Electrons have transferred from Zn to Cu ion, changing Cu ion to Cu.

In this process, if a wire and an electrical device is linked to both ends of the battery, the electrons will flow from high-end to low-end and do work.

2) *Fuel Cells*

Fuel cells[18] are devices that convert the chemical energy of a fuel directly into electricity by electrochemical reactions.

Fuel cells have essentially the same components as a battery. Each cell of a fuel cell system has a matching pair of electrodes: the high-end to supply electrons and the low-end to absorb electrons. Both electrodes are immersed in and separated by an electrolyte, which may be a liquid or a solid, conducting ions or low-energy electrons between the electrodes to complete the chemical reaction.

A fuel, such as hydrogen, is supplied to the high-end and oxidized by oxygen provided, producing hydrogen ions, oxygen ions, and high-energy electrons. The high-energy electrons provide electricity to the high-end, while the hydrogen ions and oxygen ions move to the low-end, where they absorb low-energy electrons (energy being used) and form water. The chemical and physical processes have been shown in the previous section, and the following represents the result:

$$2\,H{:}H + O{::}O \rightarrow 2\,H{:}O{:}H + 8\,e^{+}$$

XII. Conclusion

1. The Big Bang created four kinds of base particles[3]: proton (p), electron (e), neutrino (ν), and photon (γ).
2. The electron usually shares energy with a photon as an electron unity (eγ), except in a nucleus formed in a nuclear fusion centre, where the photon oscillates away with excess-energy as gamma rays.
3. The electron tends to be unity:
   1) Absent from nuclear fusion, each free proton unity (pν) attracts and shares energy with an electron unity in its orbit, forming a hydrogen atom unity: (pν) + (eγ).
   2) In a fusion centre, each electron shares energy with two protons and one neutrino to form a nucleus unity: n(^{2}pνe), where atomic number n >= 2.
   3) Out of the fusion centre, atom unities are formed with the same numbers of protons and electrons: n(^{2}pνe) + n(eγ), where n >= 2.
4. Electrons move to be dynamic unity, expressed as two distinct types of oscillations[3]:
   1) Electrons of the atom unity oscillate around their nucleus, attracting while energy sharing. Each electron's orbit is the equilibrium of its unity force.
   2) Outside electric forces can break free those outermost electrons from the atom unities of a conductor, oscillate them away, align and energize them, forming stronger electron waves with magnetic effects, and simultaneously cause them to flow from high-end to low-end as electric currents. Electricity is the synchronized repelling force of the electric currents, in which each electron transfers its excess-energy to an electrical device or to its bonded photon causing light. After transferring all its excess-energy, the electron joins in an atom unity that lost an electron previously, attracting while energy sharing again.
5. Free electrons oscillate away from their energy source (the electric source) as far away as possible, which is perpendicular from the direction of the simultaneous electric current.
6. Free photons also oscillate away from their energy source (the electrons) as far away as possible, which is at right angles from the electrons. That is why the magnetic waves (photon waves actually) are at right angles from the electron waves.
7. The free electron's excess-energy is kinetically repelling and gradually reducing. Therefore, the following are misconceptions: 1) the concept of an electron having a specific "electric charge"; 2) the concepts of "negative" or "positive" charges; 3) the concept that electrons and protons are "oppositely charged".
8. Also, according to the Principles of Matter, matter's energy is scalar, not vector. Any "antimatter" is a misconception, including the concept of a "positively charged electron", and the idea of "annihilation".

9. Nuclear fusion is the unity force in action, creating nuclei so that every electron shares energy with two protons and one neutrino as n(^{2}pve), where atomic number n >= 2. Thus, unity force replaces strong force and quantum chromodynamics[8].
10. Beta decay is also unity force in action: in the unstable nucleus unities, outside initial energy can break out a neutrino and an electron (electron emission) as excess-energy; or break in an electron (electron capture) and break out a neutrino as excess-energy; leaving most of the original particles to share energy as new nucleus unities. Thus, unity force also replaces weak force[12].
11. Electromagnetism is electron waves showing magnetic effects while releasing excess-energy as photon waves. Therefore, electromagnetism is the unity force of free electrons, and should be called electronism.
12. Magnetic effects result from stronger electron waves aligning weaker electron waves. After aligned, they become attractive to each other, because aligning is energy sharing.
13. There are no such things as magnetism, magnetic fields, or magnetic waves. They are just electron fields with electron waves releasing excess-energy as photon waves.
14. In circuits and electrical networks, high kinetic end (high-end or +) and low kinetic end (low-end or –) are suggested for indicating electrical current directions.
15. Chemistry is the unity force in action, where electrons are action agents for energy sharing (electron sharing or chemical bonding), excess-energy releasing, and energy transferring in atom and molecule unities.

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The New Quantum Technologies Demand New World Vision

By Prof. Maria Kuman

Abstract- Year 2025 is announced to be International Year of Quantum Science and Technology and let's face it, the new Quantum Technologies require revision of our old world vision. Researchers found that surfaces of metamaterials can bend, focus, and transformlaser beams and serve as beam shapers. And an electron excited with energy hν when passing between the column surfaces of metamaterials can spontaneously transition to a lower energy level (with energy hν1 < hν). Classical optic cannot explain such spontaneous transitions and the researchers working with metamaterials are trying to explain it with resonance with "the vacuum field". Vacuum cannot have resonance frequencies because there is nothing in the vacuum to vibrate. And here it becomes clear that our old belief (that ether does not exist – it is vacuum) does not fit the new quantum research. I came to the conclusion that Space Matrix NEMF must exist from my life-long studies of the aura, which is weak NEMF. Since only nonlinear fields do not dissipate and can imprint information, I concluded that the Universe must have been created from nonlinear electromagnetic field (NEMF).

Keywords: quantum technologies, metamaterials, ether NEMF, metamaterials' NEMF, resonancelaser beam – metamaterials' NEMF.

GJSFR-A Classification: DDC: 530.12, 530.11

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Keywords: quantum technologies, metamaterials, ether NEMF, metamaterials' NEMF, resonancelaser beam – metamaterials' NEMF.

I. Introduction – Metamaterials and My Studies of the Aura

In the August 2022 issue of Physics Today, an article was published "Metasurfaces for Quantum Technologies" [1], in which the authors Wang, Chekhova, and Kivshar describe their experiments with optical metamaterials, which manipulate the electromagnetic waves of a laser in a specialized and novel way serving as: beam shapers, beam splitters, or beam diffusers. The type of metamaterials determines the phase, amplitude, and polarization of the laser waves (within a distance much less than the wavelength). The fact that the metamaterials are flexible, compact, and highly efficient make them promising quantum optics candidates.

However, the properties of metamaterials cannot be described by the classical theories of light because the surfaces of metamaterials transform an input state into a variety of states. For example, linearly polarized light after passing through the columns of a metamaterial can be converted into a superposition of right-handed and left-handed circular polarizations. In the course of their experiments with metamaterials, the authors [1] observed electrons excited with energy hνafter passing through columns of metamaterial to spontaneously transition to a lower energy level emitting energy hν1 < hν. "Classical optics cannot explain such spontaneous transitions; their description requires a quantized field" [1].

The explanation of the authors[1] is that "these spontaneous transitions are stimulated by the vacuum field" [1]. But in a vacuum, there is nothing to vibrate and therefore, vacuum cannot offer frequencies to resonate to. So, it cannot be vacuum. My lifetime studies of the aura found that the aura is weak NEMF, which become brighter at positive emotions. The Russian scientist Shkatov found that at positive emotions the aura spins clockwise. Nonlinear physics teaches that vortices spin clockwise and suck energy. Thus, to become brighter at positive emotions, the aura must suck energy from somewhere, and I concluded that ether must exist and it must be weak nonlinear electromagnetic field (NEMF) [2].

II. My Studies of the Nonlinear Electromagnetic Field (NEMF) of the Aura, Revealed the NEMF Nature of the Space Matrix (Ether)

I started my studies of the aura by first photographing the aura with Kirlian photography (Fig. 1), which uses high frequency electric field to multiply the photons of the weak aura and make it photographable. I found that positive emotions make the aura brighter, while negative emotions make the aura dimmer and since we say we are in high spirit when we experience positive emotions and we say we are in

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low spirit when we experience negative emotions, I concluded that the emotionally-sensitive aura must be our emotional Spirit. Then I found that the ancient Jewish Cabala was teaching to high priest that the aura is our Spirit – aura (Spirit).

Since the Russian scientist Shkatov invented and patented equipment, which allows him to measure the spinning of the aura [3], he found that at positive emotions the aura spin clockwise, while at negative emotions the aura spin counterclockwise. Nonlinear Physics teaches that vortices spin clockwise and suck energy in, while anti-vortices spin counterclockwise and emit energy out. If so, 1/ positive emotions make the aura brighter because they make the aura NEMF to spin clockwise (Shkatov) and suck energy in; 2/ negative emotions make the aura NEMF dimmer because they make the aura spin counterclockwise (Shkatov) and loose energy.

However, for this to happen, there must be reservoir of NEMF energy, from which at positive emotions the clockwise spinning aura sucks NEMF energy in and becomes brighter, and to which at negative emotions the counterclockwise spinning aura releases NEMF energy and becomes dimmer. At this point, I concluded that this reservoir of NEMF energy must be the Space Matrix NEMF, from which the Universe was created. NEMF is the perfect material to create a Universe because being nonlinear field: 1/ it does not dissipate, and 2/ it can imprint information.

The Creator created a sphere of this not dissipating NEMF, then imprinted on it the information (the holographic tri-dimensional image) of the Universe to be, and the Universe was created. The Space Matrix NEMF (from which the Universe was created) was called ether in the past, which means that the ether is weak NEMF (just as our aura is). The fact that it is invisible and too weak to be measured explains why the existence of ether (which I call Space Matrix NEMF) was denied for such a long time.

In order to be able to see what is going on with the aura NEMF, I developed and patented equipment that allows me to measure the weak electromagnetic field of the aura, which is 1,000 times weaker than the electromagnetic fields of the material bodies. I found that the aura is nonlinear electromagnetic field(NEMF) with a chain of alternating vortices and anti-vortices along the backbone (Fig. 2). They are called “chakras” in ancient Hindu texts, which means “spinning wheels” in Sanskrit.

Fig. 1: Kirlian Photography of the author’s aura in 1991

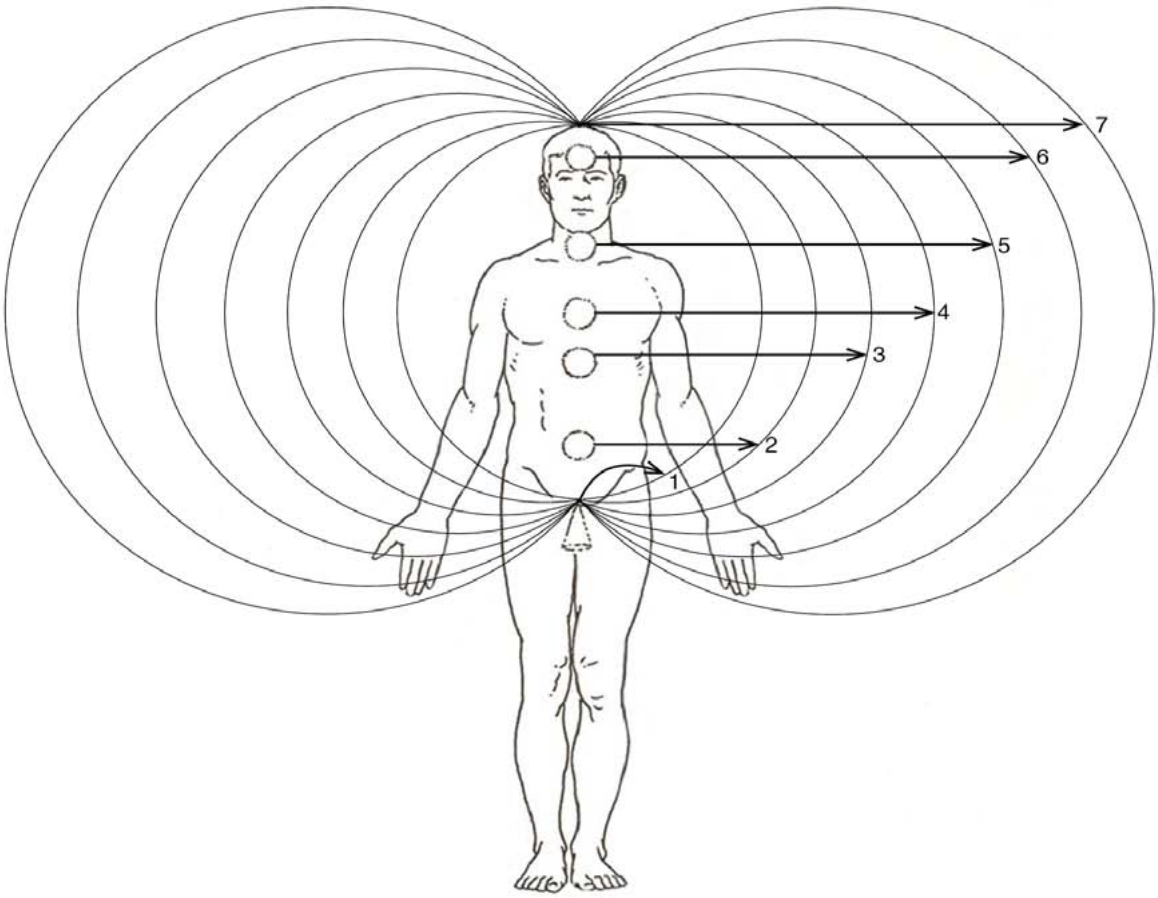

Fig. 2: The NEMF of the aura (Spirit) of male body with a chain of alternating vortices and antivortices along the backbone

III. The Quantum Optics

Now, let's go back to the research on metamaterials described in article [1] and the authors' explanation: "Classical optics cannot explain such spontaneous transitions to a state with lower energy; their description requires a quantized field."They explain their observations so: "the transitions are stimulated by the vacuum field" [1]. The authors are right about the resonance frequencies, but vacuum cannot offer such resonance frequencies because there is nothing in a vacuum to vibrate. However, since the resonance is metamaterial specific, it must be a resonance with a frequency of the metamaterial-specific $NEMF_m$.

However, if it was a resonance with the frequencies of the ether, we would have the same influence regardless what type of metamaterial was used and this is not the case. Since metamaterials could: 1/ cause spontaneous emission with different wavelength, 2/ split the laser beam, or 3/ diffuse the laser beam, etc., the resonance is with the NEMF of the metamaterial, which is 1,000 time stronger than the NEMF of the ether. The whole material world was created by Black Holes of anti-matter and the NEMF that separated the matter from the anti-matter was imprinted on all material creations, which automatically explains the dualism wave particle [5].

This made the whole material world a material body and material-specific NEMF. Only the presence of material-specific $NEMF_m$ in each material could explain the different influence of different metamaterials when the laser beam passes through miniature columns of the metamaterials. However, the metamaterial NEMF is the NEMF of the ether increased by the spinning Black Hole 1,000 times and modulated by the specific frequencies of the material. Thus, the spinning Black Holes are the one that suck the weak NEMF of the ether on one side and spit out material plasma stars on the other side with 1,000 times stronger NEMF and with imprinted specific frequencies of the material.

IV. Einstein's Blunts

The first blunt of Einstein's relativistic theories was that the Universe is static. When Alexander Friedman offered the dynamic model of expanding and contracting Universe in 1924, it took Einstein 8 years to accept it. The second blunt of Einstein was his basic

postulate in his relativistic theories that there is no ether – it is vacuum. But the success of his special theory of relativity was based on the fact that he used the spherical geometry of Riemann. However, if there is no ether - it is vacuum in the sphere and vacuum outside the sphere - he cannot define sphere, and if so he does not have the right to use the spherical geometry of Riemann (see [2] and[4]).

V. The Mickelson Later Experiments

Both Einstein relativistic theories were built on the assumption that there was no ether, which was based on Michelson'sunsuccessful experiment of 1897 to detect difference in the propagation of light in two perpendicular directions (east-west and north-south). Such a difference should be observed, if ether was present. Mickelson got a Nobel prize for his negative result, but he continued to think that ether must exist and he could probably detect it with quipment with increased sensitivity. And he came up with the idea of rotational experiment.

Syniak did the Michelson's rotational experiment in 1911 and he found that there is ether. However, by that time the relativistic theories of Einstein were blooming, and nobody wanted to hear that these theories were based on the wrong assumption that there is no ether. In 1925, Michelson did the rotational experiment himself and confirmed the result of Syniak – there is ether. However, nobody wanted to hear the truth that there is ether(see [2] and [4]).

VI. Conclusion

Thus, the development of new Quantum Technologies requires revision of our old believes:1/ ether does exist and it is weak NEMF, and 2/ everything material is –a material body and material-specific $NEMF_m$, which is 1,000 time stronger than the weak NEMF of the ether. The observed spontaneous emission $h\nu1<h\nu$ after passing bya specific metamaterial could only be explained as spontaneous resonance emission – a resonance with the specific frequencies of the metamaterial $NEMF_m$.

Also, we need to embrace the obvious fact that ether exists. Based on my long-term studies of the aura, I claim that the ether exists and it is very weak NEMF– 1,000 times weaker than $NEMF_m$[2].This explain why the existence of ether was denied for such a long time – it is invisible field, which is too weak to be detected - it is 1,000 times weaker than the nonlinear electromagnetic field of the material bodies $NEMF_m$(see my articles [2] and [4]). The 1,000 time increase of the $NEMF_{ether}$ to make $NEMF_m$ is done by the spinning Black Holes, which are hyperboloid funnels of antimatter (thus the name Black Holes in the ether) sucking ether's weak NEMF from one side and spitting out plasma star on the other side with 1,000 times stronger material-specific $NEMF_m$.

Thus, the fact that after passing through columns of metamaterials the laser beams are modified differently means that everything material is a material body and NEMF [4], but the NEMF of each material is material-specific, i.e. it is the ether NEMF multiplied 1,000 times and with imprinted specific frequencies of the material. Only in this way can we explain the specific influence of different metamaterials on the passing by them laser beams. Now, when we try to make quantum computers operating with informational NEMFs, it is high time to acknowledge the fact that: 1/everything material is a material body and material-specific $NEMF_m$, and 2/ the ether exists and it is weak NEMF.

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Charge Neutralization Process (CNP) as a Foundational Principle of Physical and Biological Creativity

By Pavle Vesic

Abstract- This paper proposes that the Charge Neutralization Process (CNP) represents a fundamental physical principle underlying stability, emergence, and creativity in both the physical and biological realms. Rather than viewing charge neutralization as a passive consequence of electrostatic interaction, this work frames it as a primary driver of order and complexity in nature. From atomic structures to neuronal systems, CNP provides a dynamic mechanism by which the universe balances oppositional forces, enabling the formation of stable systems and novel structures.

GJSFR-A Classification: *LCC: Q174.8*

Strictly as per the compliance and regulations of:

Charge Neutralization Process (CNP) as a Foundational Principle of Physical and Biological Creativity

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Abstract- This paper proposes that the Charge Neutralization Process (CNP) represents a fundamental physical principle underlying stability, emergence, and creativity in both the physical and biological realms. Rather than viewing charge neutralization as a passive consequence of electrostatic interaction, this work frames it as a primary driver of order and complexity in nature. From atomic structures to neuronal systems, CNP provides a dynamic mechanism by which the universe balances oppositional forces, enabling the formation of stable systems and novel structures.

I. Introduction

Modern science explains stability and formation of matter through electromagnetic and nuclear interactions, yet the concept of charge balance remains secondary in most models. We propose elevating Charge Neutralization Process to a central position in understanding the genesis of structure and function across scales.

II. The Physical basis of CNP (3,4)

The Charge Neutralization Process (CNP) refers to the tendency of a bounded material system to consistently exhibit electrical neutrality in relation to its external environment.

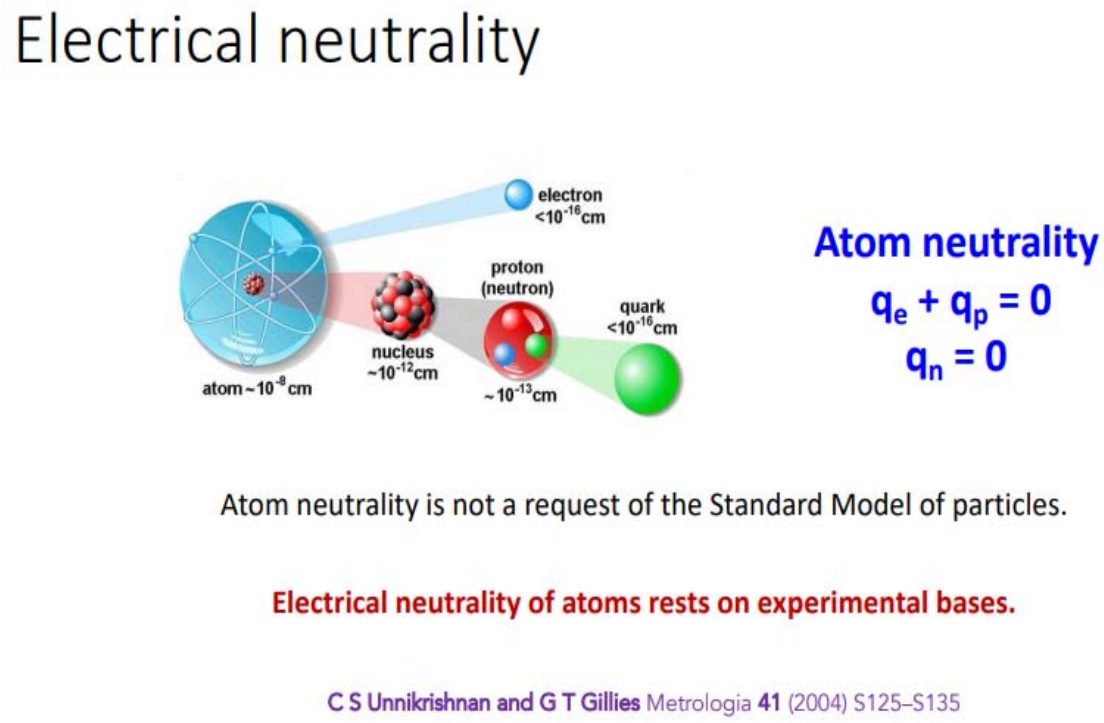

Figure 1

Author: *e-mail: pavlevesic@gmail.com*

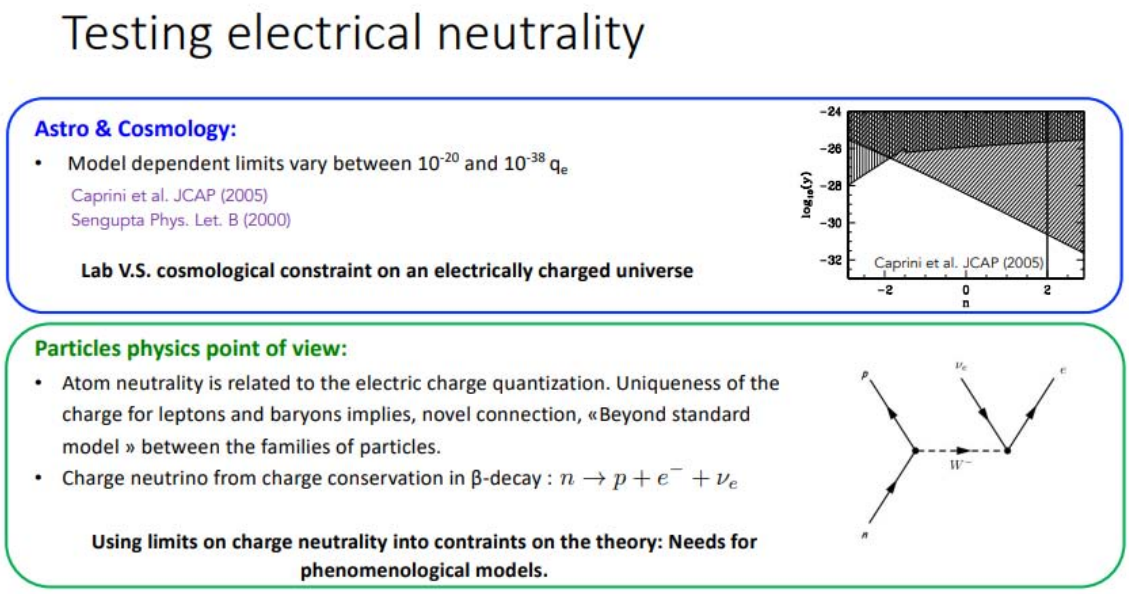

Figure 2

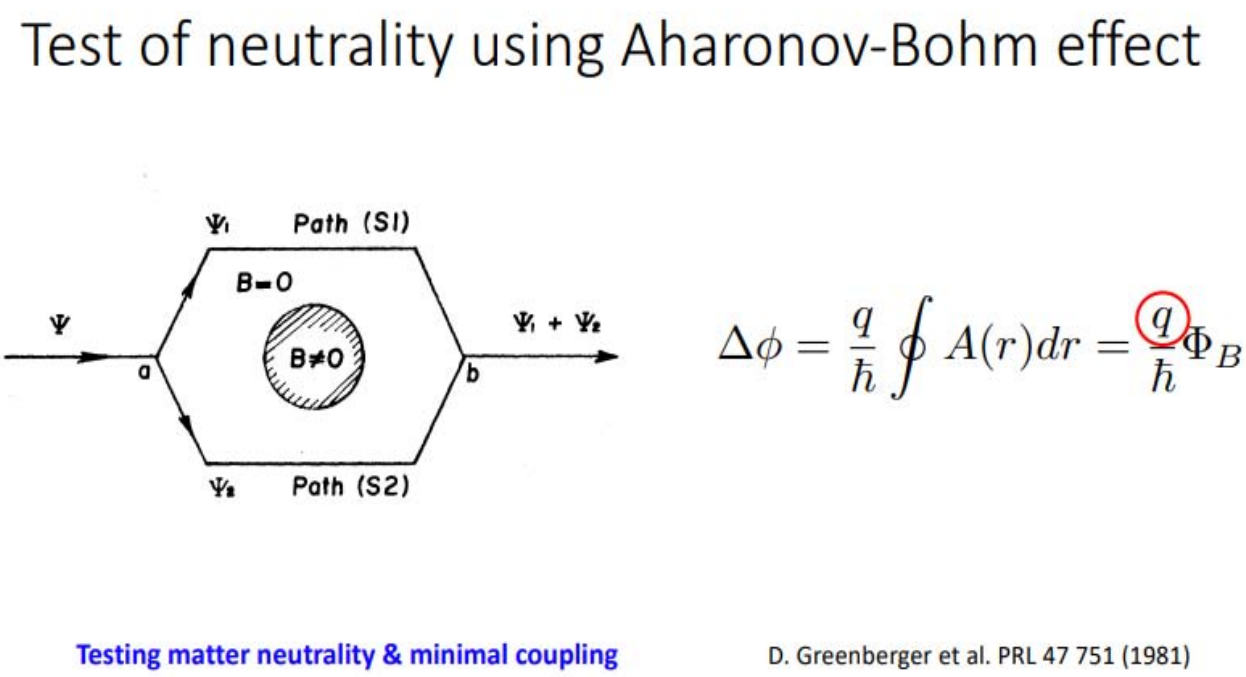

Figure 3

Electrical neutrality is disturbed by the influence of incoming energy basically in the form of photons. The time interval during which the disturbed neutrality is restored is determined by the Compton frequency of the electron.

CNP implies that neutrality is not merely a result, but a goal-oriented tendency intrinsic to nature. Moreover, we introduce the idea that the electron, (proton and neutronas well) may be a toroidal energy configuration (5). This aligns with models in sub-quantum physics that describe the electron as a resonance-bound system.

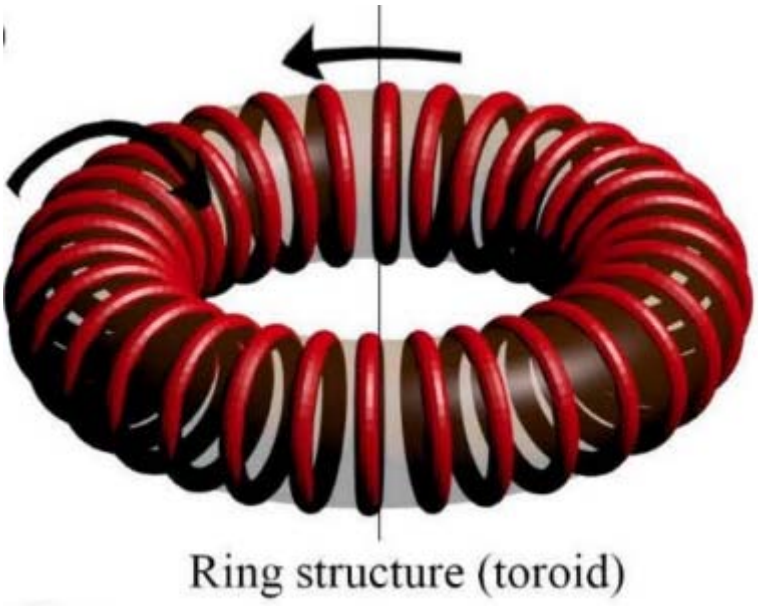

Figure 1: Conceptual diagram of a toroidal electron structure

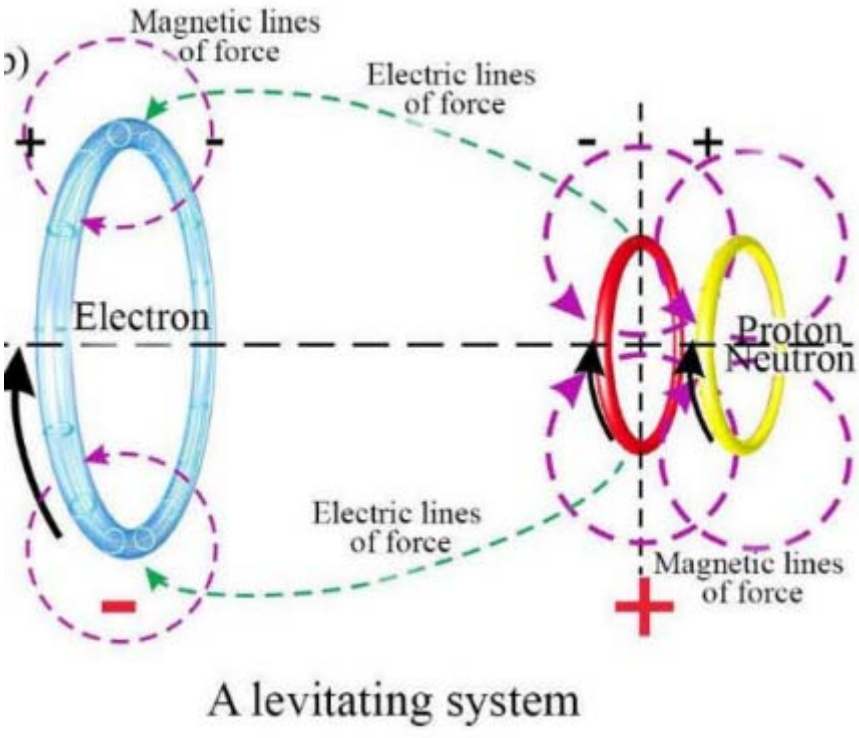

Figure 2: Atomic electric neutrality is dynamic process (12)

CNP is a cosmic process whose effects can be roughly observed on three levels of complexity:

1. *The formation and maintenance of neutrality in all elements of the periodic table,* achieved by generating the necessary number of neutrons located within the atomic nucleus.
2. *The formation of ribonucleic acid (RNA) and deoxyribonucleic acid (DNA)* molecules in unicellular organisms (systems), which are located in the cell nucleus.
3. *The formation of neurons in multicellular organisms,* culminating in the brain.

Subsequent known levels of CNP influence include the formation of planets, stellar systems, galaxies, and beyond.

III. Biological Manifestation of CNP

In biological systems, CNP manifests itself on two fundamental levels:

- Through the electrical neutrality of unicellular organisms, achieved via RNA (or DNA) molecules,
- And through the electrical neutrality of multicellular organisms, maintained by neurons.

In other words, RNA (DNA) and neurons—each at its respective level of complexity—ensure the neutrality of physical matter through a multilayered structure, ultimately realized via the neutron, as described in references (3, 4).

All of our sensory systems have emerged as a CNP-based response to disruptions of neutrality caused by incoming energy—primarily photons—detected in the outer valence electrons.

Likewise, our movement is entirely enabled and regulated by the mechanisms of CNP (3, 4).

Finally, the highest manifestation of CNP is the emergence of consciousness (3), conceptualized as EERSP.

IV. CNP and the Creative Process

We define creativity as a system's ability to achieve higher-order stability through novel charge configurations. CNP functions as a physical substrate of innovation — a principle that could explain self-organization across domains.

V. Cosmological Implications

If the universe tends toward charge-neutral states, then CNP could be a guiding principle of cosmic evolution, possibly underlying:

- Quantum fluctuations and vacuum polarization
- Formation of galaxies and cosmic structures
- The apparent arrow of time via increasing complexity under charge symmetry

This perspective also aligns with the view of the universe as a giant quantum ether-based computer — a system that calculates and stabilizes via distributed charge-resonance interactions.

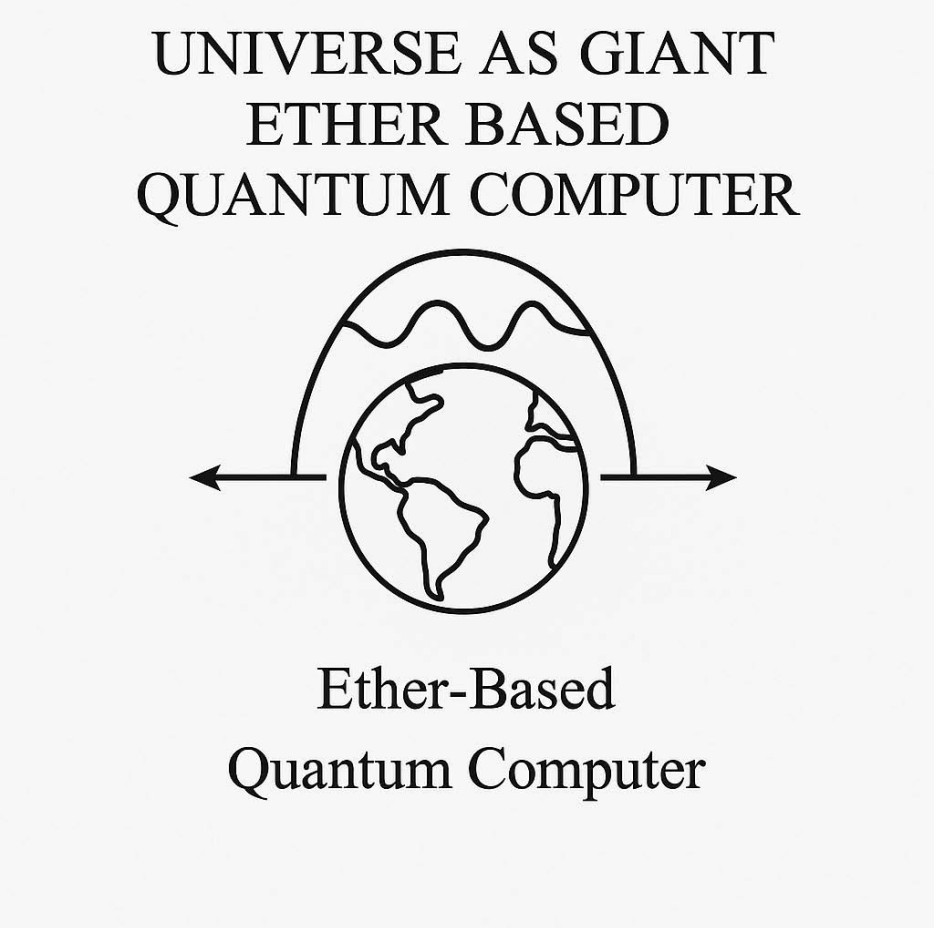

Figure 3: Schematic of aether-based quantum computing model representing cosmological CNP equilibrium dynamics

VI. Future Research and Experimental Outlook

- We propose computational and laboratory simulations:
- Modeling CNP at subatomic levels using quantum field dynamics
- Tracking charge distributions in neuronal networks
- Exploring resonance patterns in biological and EM systems as evidence of CNP
- Testing ether-field models for stabilizing effects in quantum-coherent systems

A multidisciplinary approach is necessary, integrating quantum physics, biophysics, nonlinear systems theory, and consciousness studies.

VII. Mathematical Modeling of CNP Dynamics

Let the local net charge imbalance in a system be:

$$\Delta Q = \Sigma\, q_i$$

The time evolution of net charge follows:

$$d(\Delta Q)/dt = -\alpha\, \Delta Q$$

Here, α is the neutralization coefficient, a function of environmental parameters such as charge density, frequency, and etheric conductivity.

We hypothesize that this dynamic underlies both subatomic CNP effects and larger-scale biological or cognitive resonance.

VIII. Conclusion

CNP offers a bridge between physics, biology, and cognitive science by providing a unified process for the emergence of complexity and stability. Recognizing charge neutralization not as a byproduct but as a generative principle opens new avenues for understanding the nature of creativity, consciousness, and the structure of the cosmos. It suggests that creation — from particles to thoughts — is a resonance-driven, charge-balancing act within a deeply interconnected field structure we are only beginning to understand.

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Introduction

FSFRC/ASFRC is the most prestigious membership of Global Journals accredited by Open Association of Research Society, U.S.A (OARS). The credentials of Fellow and Associate designations signify that the researcher has gained the knowledge of the fundamental and high-level concepts, and is a subject matter expert, proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice. The credentials are designated only to the researchers, scientists, and professionals that have been selected by a rigorous process by our Editorial Board and Management Board.

Associates of FSFRC/ASFRC are scientists and researchers from around the world are working on projects/researches that have huge potentials. Members support Global Journals' mission to advance technology for humanity and the profession.

FSFRC

Fellow of Science Frontier Research Council

FELLOW OF SCIENCE FRONTIER RESEARCH COUNCIL is the most prestigious membership of Global Journals. It is an award and membership granted to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Fellows are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Fellow Members.

Benefits

To the institution

Get letter of appreciation

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.

Exclusive Network

Get access to a closed network

A FSFRC member gets access to a closed network of Tier 1 researchers and scientists with direct communication channel through our website. Fellows can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation

Certificate

Receive a print ed copy of a certificate

Fellows receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation

Designation

Get honored title of membership

Fellows can use the honored title of membership. The “FSFRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., FSFRC or William Walldroff, M.S., FSFRC.

Career | Credibility | Exclusive | Reputation

Recognition on the Platform

Better visibility and citation

All the Fellow members of FSFRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation. All fellows get a dedicated page on the website with their biography.

Career | Credibility | Reputation

Future Work

Get discounts on the future publications

Fellows receive discounts on future publications with Global Journals up to 60%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial

GJ Internal Account

Unlimited forward of Emails

Fellows get secure and fast GJ work emails with unlimited forward of emails that they may use them as their primary email. For example,
john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation

Premium Tools

Access to all the premium tools

To take future researches to the zenith, fellows and associates receive access to all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

Conferences & Events

Organize seminar/conference

Fellows are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

Early Invitations

Early invitations to all the symposiums, seminars, conferences

All fellows receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

Exclusive

Publishing Articles & Books

Earn 60% of sales proceeds

Fellows can publish articles (limited) without any fees. Also, they can earn up to 60% of sales proceeds from the sale of reference/review books/literature/ publishing of research paper. The FSFRC member can decide its price and we can help in making the right decision.

Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Fellow members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

Access to Editorial Board

Become a member of the Editorial Board

Fellows may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. Additionally, Fellows get a chance to nominate other members for Editorial Board.

Career | Credibility | Exclusive | Reputation

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

ASSOCIATE OF SCIENCE FRONTIER RESEARCH COUNCIL

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Organize seminar/conference

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Exclusive

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Earn 30-40% of sales proceeds

Associates can publish articles (limited) without any fees. Also, they can earn up to 30-40% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.

Exclusive | Financial

Reviewers

Get a remuneration of 15% of author fees

Associate members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

And Much More

Get access to scientific museums and observatories across the globe

All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

Associate	Fellow	Research Group	Basic
$4800 **lifetime designation**	$6800 **lifetime designation**	$12500.00 **organizational**	APC **per article**
Certificate, LoR and Momento **2** discounted publishing/year **Gradation** of Research **10** research contacts/day **1 GB** Cloud Storage **GJ** Community Access	**Certificate,** LoR and Momento **Unlimited** discounted publishing/year **Gradation** of Research **Unlimited** research contacts/day **5 GB** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**Certificates,** LoRs and Momentos **Unlimited** free publishing/year **Gradation** of Research **Unlimited** research contacts/day **Unlimited** Cloud Storage **Online Presense** Assistance **GJ** Community Access	**GJ** Community Access

Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

During submission of the manuscript, the author is confirming an exclusive license agreement with Global Journals which gives Global Journals the authority to reproduce, reuse, and republish authors' research. We also believe in flexible copyright terms where copyright may remain with authors/employers/institutions as well. Contact your editor after acceptance to choose your copyright policy. You may follow this form for copyright transfers.

Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for Writing a Good Quality Science Frontier Research Paper

Techniques for writing a good quality Science Frontier Research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of science frontier then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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