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The Nature of the Neutrino

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Keywords: neutrino, unity, unity force, nuclear fusion, beta decay, nuclear fission.

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In a nuclear fusion centre, the base unities (pν and eγ) are so dense and hot that their sharing energy is raised so high from their potential energy (Ep → Es), they become energy sharing (nuclear fusing). Nuclear fusion is the unity force in action, creating nucleus unities so that every neutrino shares energy with two protons and one electron as $n(^2pνe)$, where atomic number n >= 2. In a nucleus unity, neutrinos and electrons are energy-sharing agents, orbiting protons to share and distribute energy. Thus, unity force replaces strong force and quantum chromodynamics. Excess-energy release is an essential aspect of unity force to maintain the newly produced unities. Besides being an agent for energy sharing, the neutrino is also an agent for excess-energy releasing ($ν^+$) in nuclear fusion, beta decay, and nuclear fission. In the universe, most nuclear fusion centres with excess-energy releasing form stars and planets. 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. In a black hole, matter transfers its potential energy (Ep) completely into sharing energy (Es): Ep → Es, so that Ep = 0, and sharing energy becomes infinity: Es = Fu = Mu → ∞, merging energy and mass into a physical singularity. Mass and energy are properties of matter, not physical entities, and not changing into each other. Although black holes merge mass and energy, the concept of mass-energy equivalence ($E = mc^2$) is still deemed as a misconception. Every galaxy is a unity, the ultimate unity with its ultimate unity force, with at least one black hole as the unity centre. If two or more black holes exist in one galaxy, they are close enough to attract each other and will eventually merge into one. Unity force (instead of gravity) forms the hierarchical structure of each galaxy, making the black hole its unity centre. Under a galaxy, each star is 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 (eγ). Beta decay is also the unity force in action: in an unstable nucleus unity, 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 a new nucleus unity. Thus, unity force replaces weak force. A nucleus shows its every (pe) as a neutron. The formation of nuclei (nuclear fusion), the breaking of nuclei (beta decay), and the formation of neutron stars, all prove that a neutron = (p + e). "Positron" is re-defined as a high-energy electron. Matter's energy is scalar, not vector. Any "antimatter" is a misconception, including the concept of "positively charged electrons", the concept of "antineutrinos", and the idea of "annihilation". Therefore, beta decays should be categorized into electron emission and electron capture, instead of "negative or minus" and "positive or plus". In nuclear fusion or beta decay, after getting excess energy, a neutrino oscillates away from the energy source as invisible light, repelling while excess-energy releasing to be unity, until it transfers its remaining excess energy to a receiving nucleus and joins in the nucleus unity. In the receiving nucleus, the in-coming neutrino can transfer its remaining excess energy to another neutrino, breaking it free with lesser energy and frequency (another beta decay).With very high energy from nuclear fusion, or with high energy from beta decay, neutrinos oscillate in different high frequencies and are mis-conceptualized as different types or "flavours", or "antineutrinos". Releasing their excess energy gradually while travelling, neutrinos reduce speed and oscillation frequency gradually, changing their "flavours", and making the concept of "neutrino oscillation" another misconception.

Keywords: neutrino, unity, unity force, nuclear fusion, beta decay, nuclear fission.

I. Introduction

Physicist Wolfgang Pauli in 1930 first predicted the neutrino, with little mass and without electric charge, to explain the loss of energy in the process of beta decay. Physicist Enrico Fermi in 1934 provided the theory of beta decay and gave the particle its name.[1,2]

Physicist Wang Ganchang in 1942 first proposed the use of beta capture to detect neutrinos experimentally.[2]

In the Cowan-Reines neutrino experiment[3] in 1956, Physicists Clyde Cowan and Frederick Reines reported the first artificial detection of neutrinos. They proposed that antineutrinos emitted in a nuclear reactor reacted with protons to produce neutrons and positrons. Each positron immediately met an electron, annihilating each other, making a gamma ray. The coincidence of both events - neutron capture and positron annihilation -

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gives a unique signature of an antineutrino interaction (more detailed discussions in the Beta Decay section).

In 1965, Frederick Reines, Friedel Sellschop and their group identified the first neutrino in nature, in a specially prepared chamber at a depth of 3 km in a gold mine in South Africa.[4]

According to current knowledge, there are three types, or "flavours", of neutrinos after the three leptons with electric charge: the electron neutrino, the muon neutrino, and the tau neutrino. Each neutrino has an antiparticle, called an antineutrino[1,2]. The three types of neutrinos change into each other over time, called neutrino oscillation: an electron neutrino could turn into a muon or tau neutrino and then back again[5]. Neutrinos travel near the speed of light[2].

But the nature of the neutrino still needs a more profound and correct understanding. The current knowledge of the neutrino has been based on certain misconceptions since its discovery. So, I am taking a deeper and distinct perspective of the neutrino, from the fundamental principles of matter and the origin of the neutrino.

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:[6,7]

1. Matter is any substance that has mass and energy. Mass and energy are properties of matter, not physical entities. Matter's energy is scalar, not vector.
2. Matter shows its energy (E) as potential energy (Ep), sharing energy (Es) and kinetic excess energy (Ee): E = Ep + Es + Ee.
   - 2.1. Matter or a system shows its kinetic excess energy (Ee > 0) as a free particle; after releasing or transferring the excess energy (Ee = 0), it keeps the remaining energy – its energy limit (Ep + Es) - as a (part of a) unity. That is, unity is matter with its energy limit.
   - 2.2. Matter or a system shows its sharing energy (Es) as weight (to its unity centre Wu), which can be standardized as mass (m or Mu): Es = Wu = Mu.
   - 2.3. Matter or a system does not show its potential energy (Ep) but transfers it between its sharing energy (Es). For example, when we are going up in the air (in an airplane), our weight is decreasing while our potential energy is increasing (Es → Ep). When we go even higher (in a spaceship), we become "weightless" (weighing less). When we are landing on the Moon or Earth, our potential energy is decreasing while our weight is increasing (Ep → Es).
3. *Unity force* (Fu = Es + Ee) is matter's tendency to be unity, expressed as repelling while excess-energy releasing (oscillating away, Ee → 0) out of a unity, or attracting while energy sharing (oscillating around, Ee = 0) in a unity:
   - 3.1. A free particle (Ee > 0) oscillates away from the energy source, repelling while excess-energy releasing (Ee → 0), forming particle waves, showing as light if the particle is almost massless (e.g., a photon or a neutrino), or showing magnetic effects if the particle has the mass about an electron, until becoming part of a unity (Ee = 0).
   - 3.2. When in unity (Ee = 0), matter oscillates around (orbits) the unity centre, attracting while energy sharing, like an electron orbiting an atomic nucleus or a planet orbiting a star. The orbit is the equilibrium of its unity force: Fu = Es = Wu = Mu.
   - 3.3. Breaking a unity requires strong enough initial energy, leading to a new unity in the new situation. The more energy is shared (Ep → Es, e.g., in a nuclear fusion), the tighter the formed unity (e.g., the produced nucleus unity), the more initial energy is required to break the unity (e.g., in beta decay), and vice versa.

III. The Origin of the Neutrino

The Big Bang created four kinds of base particles: proton, electron, neutrino, and photon, in descending order of mass.[6,7,8]

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

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

Each free electron (e) shares energy with a free photon (γ) as an electron unity (eγ) 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.

So, I propose and summarize:

1. The Big Bang created the neutrino as one of the four base particles.
2. The neutrino is an energy-sharing agent and tends to be in a proton unity (pν), where the proton is the unity centre. Absent from nuclear fusion, a hydrogen nucleus has only one proton unity (pν).

IV. The Neutrino in Nuclear Fusion

In a nuclear fusion centre, the base unities (pν and eγ) are so dense and hot that their sharing energy is raised so high from their potential energy (Ep → Es), they become energy sharing (nuclear fusing). That is, nuclear fusion is the unity force in action, mainly through the proton-proton chain reaction[9], in the following simplified steps, updated from my original version:[6,7,8]

1. Two proton unities (pν) and two electron unities (eγ) 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 ${}^2p\nu e\gamma$ 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, ${}^4p^2\nu^2 e = 2({}^2p\nu e)$, becomes repelling while releasing the excess energy mentioned above and moves out of the fusion centre to the outer core as the nucleus 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 the atomic number $n > 2$, if the situation permits.
6. Therefore, in a newly formed nucleus unity from nuclear fusion, every neutrino shares energy with two protons and one electron as $n({}^2p\nu e)$, where the atomic number $n >= 2$. Although isotopes happen, this is the main composition.
7. Most fusion centres release their excess energy (nuclear decay) by releasing high-energy neutrinos, photons, and electrons:
   - 7.1. The high-energy neutrinos and photons (ν^+ and γ^+) carry their energy away directly as light (invisible in the beginning due to high energy).
   - 7.2. The high-energy electrons (e^+) transfer their energy to normal electron unities (eγ) that in turn transfer the energy to their bonded photons (no "annihilation"), producing gamma rays (γ^+) as light:

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

8. The rest, extra-large fusion centres could not release their excess energy in the inner core but use it instead to form heavier nucleus unities and eventually merge mass and energy into a singularity. That is, without repelling by excess-energy releasing, these extra-large fusion centres eventually become black holes with much stronger attracting unity forces of their respective galaxies.

So, I propose and summarize:

1. Nuclear fusion is the unity force in action, creating nucleus unities so that every neutrino shares energy with two protons and one electron as $n({}^2p\nu e)$, where atomic number $n >= 2$. In a nucleus unity, neutrinos and electrons are energy-sharing agents, orbiting protons to share and distribute energy. Thus, unity force replaces strong force[10] and quantum chromodynamics.[7,8]
2. A nucleus shows its every (pe) as a neutron. That is, a neutron = p + e.
3. No gravity, nor gravitational collapse, is needed to draw the base unities together because they were dense and hot in the first place when created from the Big Bang. The high density and temperature were perfect for nuclear fusion, and the force of nuclear fusion (unity force) keeps pulling particles together.[6,8]
4. Excess-energy release is an essential aspect of unity force to maintain the newly produced unities. Besides being an agent for energy sharing, the neutrino is also an agent for excess-energy releasing (ν^+) in nuclear fusion.
5. In the universe, most nuclear fusion centres with excess-energy releasing form stars and planets. 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.[6,8]
6. In a black hole, matter transfers its potential energy Ep completely into sharing energy Es: Ep → Es, so that Ep = 0, and sharing energy becomes infinity: Es = Fu = Mu→ ∞, merging energy and mass into a physical singularity.
7. Mass and energy are properties of matter, not physical entities, and not changing into each other. Although black holes merge mass and energy, the concept of mass-energy equivalence ($E = mc^2$) [11] is still deemed as a misconception.
8. Every galaxy is a unity, the ultimate unity with its ultimate unity force, with at least one black hole as the unity centre. If two or more black holes exist in one galaxy, they are close enough to attract each other and will eventually merge into one.[8]
9. Unity force (instead of gravity) forms the hierarchical structure of each galaxy, making the black hole its unity centre. Under a galaxy, each star is 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 (eγ). [8]

V. The Neutrino in Beta Decay

As stated in the section of Nuclear Fusion (nuclear formation), nuclei of helium and heavier atoms are created in nuclear fusion centres, so that every neutrino shares energy with two protons and one electron as n(^{2}pνe), where atomic number n >= 2.

A nucleus shows its every (pe) as a neutron (a neutron = p + e), which will be proved again in beta decay (nuclear breaking), 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 cosmic rays, high-energy photons (gamma rays, X-rays), high-energy neutrinos, or high-energy electrons.

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

1. *Electron emission*.[12] Initial random energy breaks free a neutrino (ν^+) and an electron (e^+) shared with a proton, causing one less neutron and one more proton:

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

The broken-free neutrino (ν^+) carries its excess energy away as invisible light. The broken-free electron (e^+ or positron) transfers its excess energy to a normal electron unity (eγ), 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.[13]

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, reducing one neutron and adding one proton, becoming nitrogen-14 ($_{7}N$) with 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(pe) = 7 neutrons, leaving 7(p) = $_{7}N$; the high-energy neutrino ν^+ is released as an invisible light, and the high-energy electron e^+ transfers its excess energy to an electron unity (eγ), producing another invisible light γ^+.

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

2. *Electron capture*.[14] 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 a proton, 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 is the decay of aluminium-26 into magnesium-26, with a half-life of about 717,000 years. [14]

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 ($_{12}Mg$) with 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, 14(pe) = 14 neutrons, leaving 12(p) = $_{12}Mg$. 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.

3. *The Cowan–Reines neutrino experiment* mentioned in the Introduction is an example of both types happening together. Their procedures and explanations of the results:[3]

A nuclear reactor was used with a source of beta minus decay of iodine-131, creating electron antineutrinos (ν_e^-):

$$\text{I-131} \rightarrow \text{Xe-131} + \beta^- + \nu_e^-$$

In a detector consisting of two tanks of water with vast amounts of potential targets in the protons of the water, the neutrinos occasionally interacted with the protons, creating neutrons (n) and positrons (e^+):

$$\nu_e^- + p \rightarrow n + e^+$$

The electron-positron annihilation produces two gamma rays:

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

A liquid scintillator between the water tanks could detect the two gamma rays with flashes of light.

Their procedures are all right, but their explanations are not. The following are my explanations:

3.1. Electron emission: the source Iodine-131 has 53 protons and 78 neutrons (pe) in its nucleus ($^{131}p^{53}\nu^{78}e$). In this decay process, Iodine-131 ($_{53}I$) has a neutrino and an electron broken free with high energy, reducing one neutron and adding one proton, becoming Xenon-131 ($_{54}Xe$) with 54 protons and 77 neutrons ($^{131}p^{52}\nu^{77}e$):

$$(^{131}p^{53}\nu^{78}e) \rightarrow (^{131}p^{52}\nu^{77}e) + \nu^{+} + e^{+}$$

In the produced Xenon-131, 77(pe) = 77 neutrons, leaving 54(p) = $_{54}Xe$; the high-energy neutrino ν^{+} and the high-energy electron e^{+} (positron) are the released and transferred excess energy.

The positron e^{+} transfers its energy to a normal electron unity ($e\gamma$), producing a gamma ray γ^{+} (no annihilation), which is detectable:

$$e^{+} + (e\gamma) \rightarrow 2\,e + \gamma^{+}$$

3.2. Electron capture: The high-energy neutrino ν^{+} collides into an orbiting electron that bonds the hydrogen atom and the oxygen atom (H:O:H) close to a proton (p + e), making the proton (p) capture the orbiting electron (e), producing a high-energy neutron $(pe\nu)^{+}$, a rare occurrence, which is also detectable:

$$\nu^{+} + p + e \rightarrow (pe\nu)^{+},$$

although most ν^{+} produced in the experiment escape as excess energy.

So, I propose and summarize:

1. Beta decay is also the unity force in action: in an unstable nucleus unity, 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 a new nucleus unity. Thus, unity force also replaces weak force. [7, 15]
2. In beta decay, as agents for energy sharing and excess-energy releasing, neutrinos maintain the newly produced unities.
3. Beta decays (the breaking of nuclei) also prove that a neutron = (p + e).
4. "Positron" is re-defined as a high-energy electron. Matter's energy is scalar, not vector. Any "antimatter" is a misconception, including the concept of "positively charged electrons", the concept of "antineutrinos", and the idea of "annihilation".
5. Therefore, beta decays should be categorized into electron emission and electron capture, instead of "negative or minus" and "positive or plus".

VI. The Neutrino in Nuclear Fission

Nuclear fission is also a type of beta decay. In the process, 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 ($_{56}Ba$).[7,16]

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

So, I propose and summarize:[7]

1. In nuclear fission, the released energy comes from the potential energy of the source nuclei, not from their mass.
2. The excessive potential energy stored in the source nuclei from nuclear fusion makes them unstable.
3. Still having enough potential energy to be unstable, the produced Kr-92 and Ba-141 can beta decay into smaller and more stable atoms while releasing more high-energy electrons, neutrinos, and photons (radioactive).

VII. Conclusion

1. Matter shows its energy (E) as potential energy (Ep), sharing energy (Es) and kinetic excess energy (Ee): E = Ep + Es + Ee.
2. Matter or a system shows its kinetic excess energy (Ee > 0) as a free particle; after releasing or transferring the excess energy (Ee = 0), it keeps the remaining energy – its energy limit (Ep + Es) - as a (part of a) unity. That is, unity is matter with its energy limit.
3. Matter or a system shows its sharing energy (Es) as weight (to its unity centre Wu), which can be standardized as mass (m or Mu): Es = Wu = Mu.
4. Unity force (Fu = Es + Ee) is matter's tendency to be unity, expressed as repelling while excess-energy releasing (Ee → 0) out of a unity, or attracting while energy sharing (Ee = 0) in a unity.
5. The Big Bang created four kinds of base particles: proton (p), electron (e), neutrino (ν), and photon (γ).

6. The neutrino is an energy-sharing agent and tends to be in a proton unity (pν), where the proton is the unity centre. Absent from nuclear fusion, a hydrogen nucleus has only one proton unity (pν).
7. In a nuclear fusion centre, the base unities (pν and eγ) are so dense and hot that their sharing energy is raised so high from their potential energy (Ep → Es), they become energy sharing (nuclear fusing).
8. Nuclear fusion is the unity force in action, creating nucleus unities so that every neutrino shares energy with two protons and one electron as n(^{2}pνe), where atomic number n >= 2. In a nucleus unity, neutrinos and electrons are energy-sharing agents, orbiting protons to share and distribute energy. Thus, unity force replaces strong force and quantum chromo dynamics.
9. Excess-energy release is an essential aspect of unity force to maintain the newly produced unities. Besides being an agent for energy sharing, the neutrino is also an agent for excess-energy releasing (ν^+) in nuclear fusion, beta decay, and nuclear fission.
10. In the universe, most nuclear fusion centres with excess-energy releasing form stars and planets. 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. In a black hole, matter transfers its potential energy (Ep) completely into sharing energy (Es): Ep → Es, so that Ep = 0, and sharing energy becomes infinity: Es = Fu = Mu → ∞, merging energy and mass into a physical singularity.
12. Mass and energy are properties of matter, not physical entities, and not changing into each other. Although black holes merge mass and energy, the concept of mass-energy equivalence ($E = mc^2$) is still deemed as a misconception.
13. Every galaxy is a unity, the ultimate unity with its ultimate unity force, with at least one black hole as the unity centre. If two or more black holes exist in one galaxy, they are close enough to attract each other and will eventually merge into one.
14. Unity force (instead of gravity) forms the hierarchical structure of each galaxy, making the black hole its unity centre. Under a galaxy, each star is 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 (eγ).
15. Beta decay is also the unity force in action: in an unstable nucleus unity, 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 a new nucleus unity. Thus, unity force replaces weak force.
16. A nucleus shows its every (pe) as a neutron. The formation of nuclei (nuclear fusion), the breaking of nuclei (beta decay), and the formation of neutron stars[8], all prove that a neutron = (p + e).
17. "Positron" is re-defined as a high-energy electron. Matter's energy is scalar, not vector. Any "antimatter" is a misconception, including the concept of "positively charged electrons", the concept of "antineutrinos", and the idea of "annihilation".
18. Therefore, beta decays should be categorized into electron emission and electron capture, instead of "negative or minus" and "positive or plus".
19. In nuclear fusion or beta decay, after getting excess energy, a neutrino oscillates away from the energy source as invisible light, repelling while excess-energy releasing to be unity, until it transfers its remaining excess energy to a receiving nucleus and joins in the nucleus unity.
20. In the receiving nucleus, the in-coming neutrino can transfer its remaining excess energy to another neutrino, breaking it free with lesser energy and frequency (another beta decay).
21. With very high energy from nuclear fusion, or with high energy from beta decay, neutrinos oscillate in different high frequencies and are mis-conceptualized as different types or "flavours", or "antineutrinos".
22. Releasing their excess energy gradually while travelling, neutrinos reduce speed and oscillation frequency gradually, changing their "flavours", and making the concept of "neutrino oscillation" another misconception.
23. When oscillating away with large amounts of excess energy to be strongly repelling to all particles and spending the energy gradually (travelling through the thick crust of earth[2] or deep sea-water[17]), the neutrino can then be captured only by a nucleus. Since the remaining energy is rarely sufficient to cause a spectacular collision, the design of detection experiments must find the margin between strongly repelling and invisible collision.

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