Theory of Universe 1: Quantum Demystification

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Abstract

In this paper, I will propose a new theory to explain everything in our[1] Universe[2]. The view/theory described in this paper will show that the secret behind the Universe is much simpler than we think, and it is fundamentally classical.

Initially, I wanted to cover everything in a single paper. But the text started to get enormous and clumsy, so I decided to split it into three parts. And this is the first part of the series where I will explain the new theory and apply it to some quantum phenomena to prove how well this theory addresses quantum theory's mysteries and the Universe itself.

I will conclude the paper by representing the inanimate[3] Universe using a simple equation,

$$Z = \int \acute{e}$$

In part-2 of this paper series, I will cover some of the misconception introduced by Einstein's theories. Especially the spacetime concept, which I like to call Einstein's catastrophe[4].

Part-3 is a prequel to the theory introduced in this paper.

IS THIS THE ULTIMATE MASTER THEORY?
I will let you be the judge of that.

[1] I believe in more than one Universe, and I don't want to assume they also follow the same fundamental principles. I will also refer to our Universe as "the Universe" in the rest of the paper.
[2] Even though both consciousness and soul do play a significant part in the events of the Universe, I think they are not part of the Universe.
[3] In terms of biology, one could argue the Universe is a living organism as it exhibits the features of growth, order, sensitivity, reproduction etc. But in this paper series, I will treat it as non-living.
[4] The name comes from the fact that the cosmic catastrophe thought experiment led him to invent the General Theory of Relativity and Spacetime concepts.

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Introduction

The structure of this part is as follows,

1) This paper will first clarify what light, photons and waves are and use that understanding to describe the "ψ" in Schrödinger's equation.
2) With sufficient groundwork laid, I will use Planck's constant to devise the new theory.
3) While building the new theory, I will also introduce some changes to the Standard Model and the atomic structure. During which I will explore,
    a. Why doesn't $_1H$ atom explode?
    b. Concepts of symmetry and what is a neutron?
    c. How does the visible Universe form?
    d. How are astronomical objects created and destroyed?
    e. What is the secret behind the electron orbital configuration and magic numbers?
    f. The existence of graviton and how it impacts everything happening around us?
4) Next, I will move on to photons and their oscillation and pairing.
5) With all the theory in place, I will describe all the quantum weirdness in simple classical terms.
6) I will conclude the paper by representing the Universe using a formula, as shown in the abstract.

What is Light

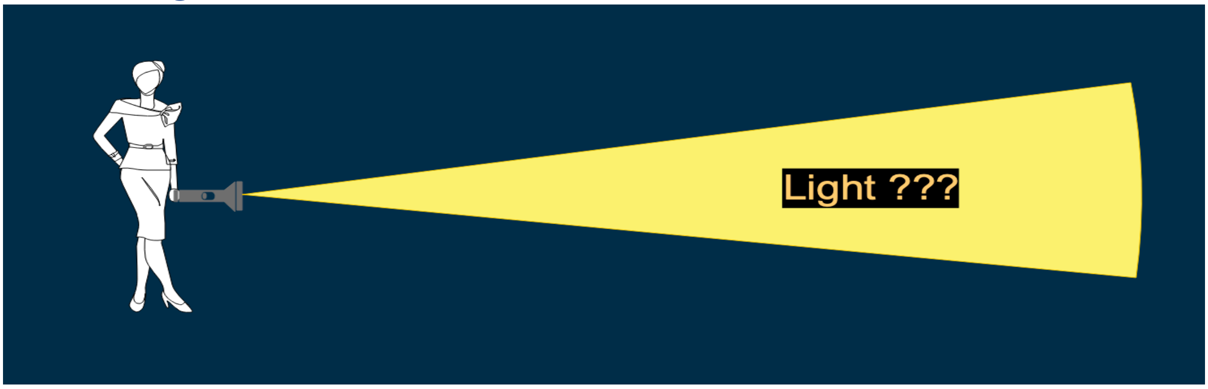

Figure 1: Person holding a flashlight

The only thing that we know for sure about the light is that it is quantised. So, we can safely admit that the light is photons.

Is the yellow area in Figure 1 the light?

It is a beam - an illumination created by the air particles when the photons strike them. The vision the person - standing vertical looking into this page - see is due to some photons leaving the light source reflecting off the air particles and reaching the person's eye. In essence, the person looking into this page or the person holding the flashlight will never see the light (or the photons) travelled in the direction of the beam unless there is a mirror at the far end.

Further, if we move this setup to space above the earth's atmosphere, neither will see the beam. There will not be a beam to see. But when a person looks directly at the flashlight, they will find it lit.

The vital point to understand here is, we need the light to see things, but we can't see the light itself.

Electromagnetic Wave vs Photon

Let's consider the light as photons and understand what happens when the photon is absorbed, using the picture below.

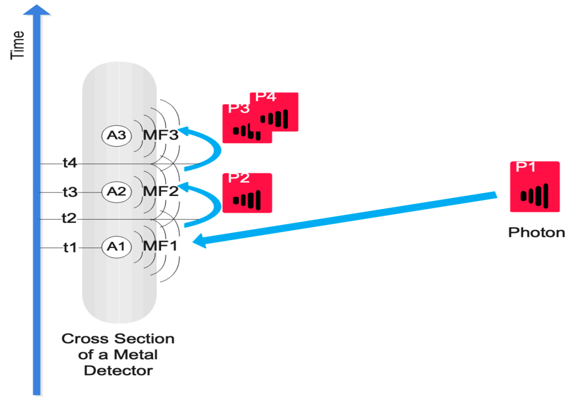

Figure 2: Electromagnetic wave vs photon

Below is the description of the above flow,

1) At t = t1,
    a. Photon-P1 carrying a tiny vibration (photon is a massless particle that carries a vibration) hits the detector's surface.
    b. Reception of photon-P1 (given it has enough energy) will excite an electron in atom-A1.
    c. Which will intern enlarge the magnetic field-MF1.
2) At t=t2
    a. The increase in MF1 will increase the field force between atom-A1 and atom-A2. With this and the atom-A1 trying to go back to an equilibrium state (we will look into symmetry in detail later), it will transfer photon-P2 to atom-A2.
    b. The magnetic field MF1 will now shrink back to its original size.
3) At t=t3, steps 1 and 2 above will repeat.
4) At t=t4, I created this step to showcase that a single photon absorbed could be released as multiple or vice-versa.

When more photons are involved, it will produce alternating fields B (magnetic) and E (electric) perpendicular to each other, creating **electromagnetic waves travelling through the sensor**. Here,

1) The change in electron energy due to consuming photons (or energy) and releasing them later is the electric wave.
2) The expansion and shrinking of the magnetic field produce magnetic wave.

It is the same process that happens when electrons move through a matter.

When photons' strength (energy * density) is incapable of causing a ripple (to create electromagnetic wave), a new set of photons equalling the original strength would be released back to the atmosphere. We call this process the reflection of light.

Any sort of kinetic energy introduced to a substance should produce some level of electromagnetic effect. For example, shouting at a properly setup metal mesh should excite some electrons and create electromagnetic waves. Dependent on the type of sensor connected to the mesh, it should realise this as a sound or a light.

The reason photon is more potent is due to its intrusive nature. The difference between kicking a football and a photon hitting a detector is analogous to a boxer's punch vs a nurse sticking a needle.

What is a wave?

Let's understand this by looking at sound, something that we comprehend better.

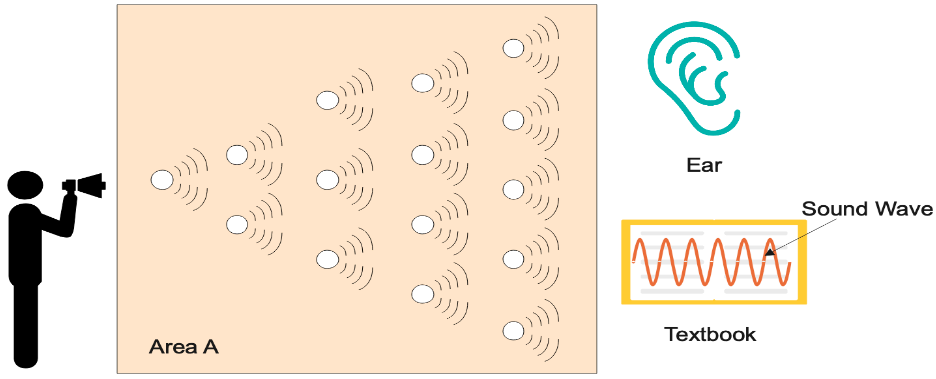

Figure 3: Sound travelling in space

Figure 3 shows the propagation of sound in space. Ignoring my pathetic diagramming skills, what is happening here is, when the person speaks, an amplified beat from the speaker creates a vibration in the air particles. That vibration propagates through to the ear, and the brain will perceive it as sound. The diagram (Figure 4) below shows the pressure wave of a sound vibration against time.

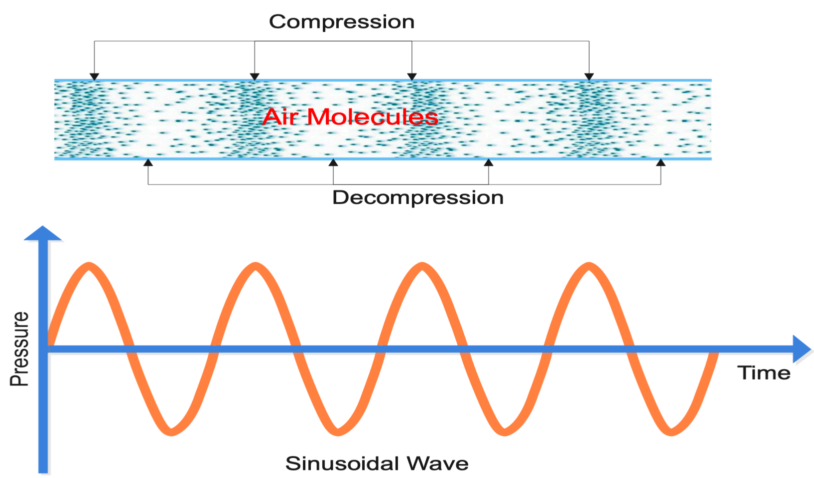

Figure 4: Sound in air pressure fluctuation against time

What is sound here?
The sound is the vibration (kinetic energy), and the rest is the disturbance caused by that vibration. Touching the eardrum with a wick should produce a sound.

So how about the wave then?
Simply a wave here is an (oscillatory) perturbation of the medium.

1) Wave is not the thing. Instead, it describes a system's behaviour or a disturbance caused to the medium.
2) The sinusoidal wave is a mathematical (physics) representation of the wavy behaviour.

Photon vs Maxwell's World

We had a look at,

1) Where does Maxwell's world (electromagnetic wave) emerge?
2) What do we perceive as a wave?
3) Sound is just the kinetic energy that causes a vibration in the eardrum.

Why does the light have to be any different?

To summarise,

1) Light is the energy carried in the photons.
2) Photon is the medium that enables the kinetic energy (light) generated in the Sun or any other source to travel through space and the vacuum.
3) It is just photons that is out there in space, not electromagnetic waves.
4) Photon and electron are the bodily things that move. The electromagnetic wave is the product of the disturbance caused by the movement of these particles in a material.
5) The wave function doesn't collapse when it interacts with the external world. Instead, the photon or the electron collapses, transferring its energy to or joining the electron cloud. It is at this point the electromagnetic wave materialises.

We will revisit these in detail later.

Field, Force and Energy trinity

- In simple term, a field is an area in space where a force will have an impact.
- Energy is the mean that is required to impart a force. A force is an energy in action or energy that is contained.
- Energy is something that does the work (kinetic) or has the ability to do the work (potential). In both these cases, there needs to be a medium.

Energy needs a medium to exist.

Electron Oscillation

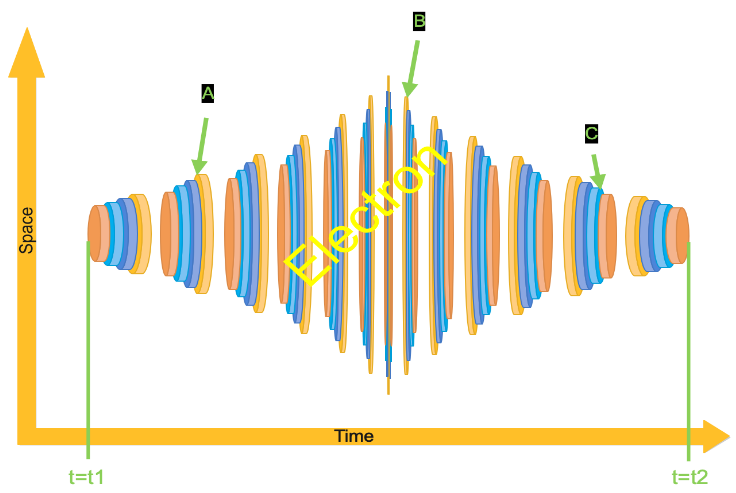

Figure 5: Single-electron moving in space

Figure 5 shows the oscillation of an electron. Again, we will revisit this later. For now, a **free moving** electron does oscillate, and it shrinks and expands with time.

Having covered enough basics, let's jump into the fun part and tame the quantum mechanics using classical theories.

Schrödinger's Equation

Without going into too much detail, let's look at what did Schrödinger end up proving [1].

He started with the Hamiltonian equation for the energy of a system. This energy equation is identical for a system with a single element or multiple.

Things started to get a bit fuzzy and quantumly when he tried to prove the particle's motion (a point in space) is a dispersion by highlighting that the particle has two separate velocities, phase velocity and moving velocity[5].

Before answering the all-important question, let's examine the function,

$$\psi(X, t) = Ae^{i(kX - \omega t)}$$

Equation 1: Ψ function

Regardless of whether this is a plane wave or dispersion, one thing is for sure, X (as X is a variable) will have more than one value for a given time (t) in Equation 1.

Max Born and Ernst Pascual Jordan interpreted ψ*ψ as a position probability density, and the famous Einstein's quote says,

"*Quantum theory yields much, but it hardly brings us close to the Old One's secrets. I, in any case, am convinced He does not play dice with the Universe.*"

Let's assume there is a meaningful explanation for the localisation and non-localisation of a particle.

What does the function ψ represent?

The function ψ is the **mathematical (plane/dispersion wave)** representation of the electron's oscillation, as shown in Figure 5.

It also represents the dispersion of enbits. The localisation and absorption are down to the symmetry of the geneton particles made of enbits.

I hope that is more than enough precursor to what is to come. Let's dive in and build the theory.

[5] Schrödinger introduced it with the following comments in his paper [1] "A similar restriction is always imposed on the wave equation, as soon as we have dispersion."

Master Theory of the Universe

The theory relies on two basic constructs. I will cover both of them in more detail throughout the paper. For now, let's go ahead and define them.

Geneton

Geneton is the blueprint for all particles in the Universe.

Particle here refers to both particles with mass and massless ones such as photons. I will use the word "particle" in the same context throughout the paper. I will use the term "bit" to refer to anything smaller than a particle.

Enbit (stands for energy bit)

Enbits are the constituent[6] of Geneton particles.

Enbits makes up all the geneton particles in the Universe. The number of enbits in a geneton particle is a constant, and let's call this **Geneton Symmetry Number** (**GSN**).

GSN here is a natural number greater than zero and is proportional to Planck's constant.

- The Planck constant is defined to have (without the units) $h = 6.62607015 \times 10^{-34}$ [2]
- $GSN \in \mathbb{N} = 105n$. I will talk about what this 105 is in the upcoming sections.
- "n" here is the number of enbits in an enbit-cluster. Let's call it **Enbit Cluster Number** (**ECN**)
- $ECN \in \mathbb{N} >= 1$. I may, at times, treat ECN as 1 to keep things simple.

Wildcards in Notations

Before we go further, I would also like to define some wildcard characters I will be using as part of the notations,

Wildcard	Meaning
*	"0" or more (at times, I will also use "0" to indicate a given property is irrelevant in the context)
+	A non "0" value

Table 1: Wildcards in notations

[6] I have refrained from using the words "elementary" or "fundamental" due to my hypothesis about mbits. Refer to "Appendix A: Mbits" for more detail.

Enbit

Let's use Figure 6 to understand what is an enbit and its properties.

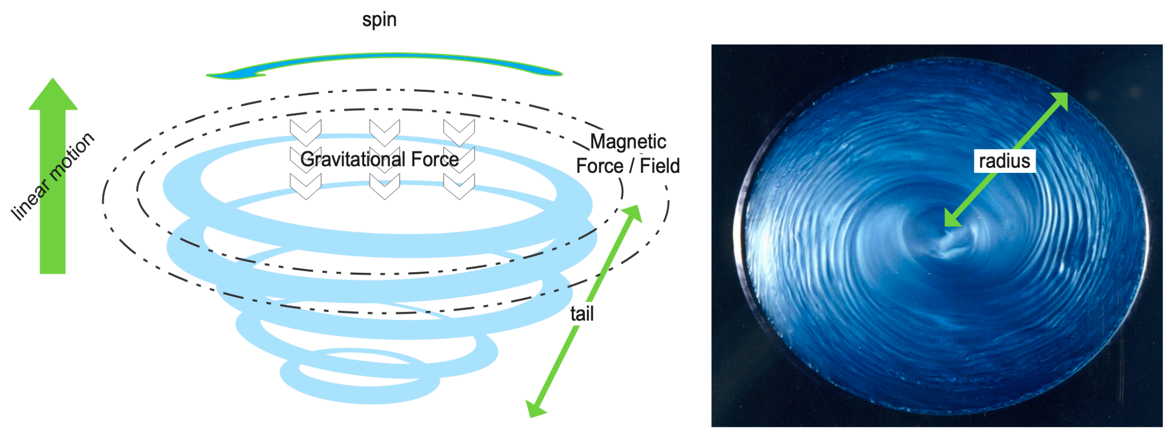

Figure 6: Picture of enbit

Enbit is a tiny (immeasurably minute) portion of a superfluid [3] or black hole (Figure 6 shows a standard enbit. It is anti-enbits that make the black hole - more on this later). You could also think of this as a black brane [4] from the String theory.

I have postulated how this structure can be made with dipole magnets in "Appendix A: Mbits" if you ponder monopoles.

Before we go into the details, we need to define the zero state of these enbits.

Singularity state

Singularity (black hole) state is the state of enbit when there is no heat energy. Singularity state would be enbit's state when it occupies almost zero space. It is the same as the zero-viscosity state of the superfluid.

Properties of Enbit

I will treat non-anti-particle (will use the term "standard" going forward) as the default one and highlight anti-particle behaviour when different.

1) Spin and the tail will create a suction (gravitational force Figure 6) towards the tail[7]. The same combination will act as a thrust in anti-bit, in the direction of linear motion.
2) More kinetic energy added to the enbit will enlarge the substance and reduce the tail. The enlargement will intern reduce gravitational force. Similarly, adding extra kinetic energy to the anti-enbit will reduce the thrust.
3) Both linear motion and angular velocity of the spin will be at the speed of light, but it can be in either direction (enbit vs anti-enbit).
4) Total magnetic field size will always be constant for a given enbit. When an enbit enlarges, it will start occupying the magnetic field's space, reducing the resultant field size.
5) The spin at the edges of the enbit will be at the light's speed, but the centre of the enbit, depending on the amount of heat (rotational energy), may not rotate at all.
6) The gravitational force will serve as the strong force, and the magnetic force will serve as the weak force.

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[7] Direction of "spin to the tail" is not important for this discussion as long as we apply the reverse for the opposite combination (enbit vs anti-enbit).

Let's go through the individual properties in detail.

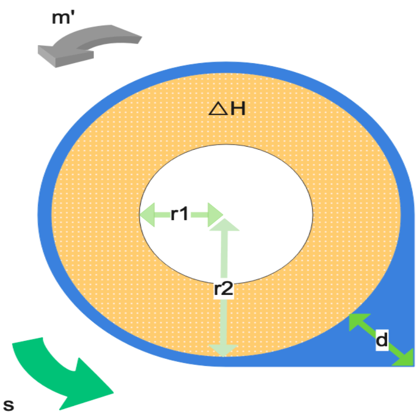

Figure 7: Enbit property definition

Heat (h)

Heat is the rotational kinetic energy of the enbit. Adding kinetic energy will enlarge the enbit, and more of the substance will start moving towards the edge and start spinning at the speed of light (c). The enlargement of the area is proportional to the total heat added to the enbit,

$$\Delta h \propto \pi*(r2*r2 - r1*r1)$$

Equation 2: Enlargement of enbit due to heat

Spin (s)

The direction of spin. This spin plays a pivotal role in the behaviour of the geneton particle - more on this in a moment. The supported values are,

Value	Description
+1	Standard enbit
-1	Anti-enbit
0	When there is no spin

Table 2: Enbit spin and values

This spin is different from what we refer to as the fermion spin of quarks (enbit-cluster) and neutrinos (enbit). The neutrino's spin is produced by the oscillation of the tail due to the vibration of the substance, causing a transverse wave motion. The wavelength being exceedingly small will create an appearance of a half spin. Hence, I am not using the terms helicity or chirality here. I will **not** talk about fermion spin in this part of the paper as it is not relevant.

This spin is the same as the photon's spin, which we currently call boson spin.

Density (d)

The density is the amount of the substance held in an enbit. For example, enbits of the heat radiation has almost zero density. In contrast, enbits of the proton has ample density, which will make them fold and revolve in orbits instead of moving linearly - more on this later.

As I mentioned before, adding heat (rotational kinetic energy) will thin the substance by enlarging the total area. The strength of the suction (thrust in the case of anti-enbit) reduces.

Singularity State Density (SSD)
The singularity state density is the density of the enbit when the total heat is zero.

Flip
Flip is the process where the direction of tails become opposite due to external magnetic pressure. The temperature change should never cause a flip.

Standard enbits can become anti-enbit and vice versa, but this will also require additional anti and enbit substance, respectively. Usually, when a geneton particle goes through this process, gravitons will provide the necessary substance or released as an output[8].

Mass (m')
The suction (enbits) and the trust (anti-enbits) produce the mass of the enbits. This property will have different value depending on the other properties.

Value	Description	Enbit type	Condition
0	There is no linear motion. There won't be any thrust or suction at this point.	any	Total heat >= SSD
m+	Enbit is moving at the speed of light in the opposite direction of the tail.	enbit	Total heat < SSD
m-	Enbit is moving at the speed of light in the direction of the tail.	anti-enbit	Total heat < SSD (density act as a thrust for anti-enbits).

Table 3: Enbit mass and values

This mass is different from the mass of a standard particle.

The sum of m' will not equal the mass of a standard particle. Again, we will explore this in more detail later.

Notation

We can use the notation below to denote an enbit,

é(d=*, m'=m+, s=+1, h=+)

For example, the notation for the neutrino would be,

é(d=+, m'=m+, s=+1, h=+)

Notation for Anti-Enbit

é(c=*, m'=m-, s=-1, h=+)

For example, the notation for the anti-neutrino would be,

é(d=+, m'=m-, s=-1, h=+)

The difference between enbit and anti-enbit is that the tail is in the opposite direction of the linear motion.

[8] The density requires mbits of opposite orientation to flip. I will cover this process in detail in part-3.

Geneton
There are only three elementary geneton particles that constitute the particle Universe. They are,

1) Electron – is an anti-particle.
2) Proton – is a standard particle. I will explain why neutron is not an elementary particle when we look at the atomic structure in detail.
3) Photon – is a massless particle. Heat radiation is a particular case of photon where the substance's density is almost zero.

The geneton particles are either photons or the ones that interact with the photons. They should have the same signature or mechanism as the photon since they interact with it naturally. An atom should absorb the photons and put its picture[9] in the photons so we human can see or sense them.

Before going deep into the individual particles' specifics, let's look at some of these particles' properties.

Notation
Let's use the notation "G" to denote geneton. I will introduce letters for different properties as I cover them.

Symmetry and Folding
I will cover the topics in this section in detail later. Below is a quick summary.

1) Every enbits of a single geneton should be identical except for their spin and location.
2) The spin and location will follow Pauli's exclusion principle.

Symmetry
Depending on the type, geneton will form a symmetrical shape aligning the enbits in a particular orientation.

The symmetry will also ensure, for a given chemical or quantum process, where inputs are particles, the output will also be particles. The only exceptions to these rules are,

1) Annihilation
2) Scattering the particle into enbits

The standard particle's symmetry is held together by the gravitational force (strong force) and the magnetic force (weak force) of the enbits. Since introducing heat to the enbits will decay the gravitational pull, the standard particle's symmetry will also weaken with temperature increase, making them soft and mobile. At a certain point, they will become 2D particle by unfolding.

Folding
Folding happens when the SSD is greater than the total heat energy ($\sum E_h$) in a standard particle.

[9] More on this under section "Visible Universe"

Localisation

The introduction of symmetry should explain the localisation/non-localisation of the particles, but since it has been a subject of interest in quantum theory, let's restate it. The whole particle will be absorbed when pulling a single enbit from the symmetry.

2-Dimensional (2D) Particle (SSD < $\sum E_h$)

The shape of a particle where their total SSD is less than or equal to the total heat energy ($\sum E_h$) will be 2-dimensional. Here each tiny circle represents an enbit-cluster.

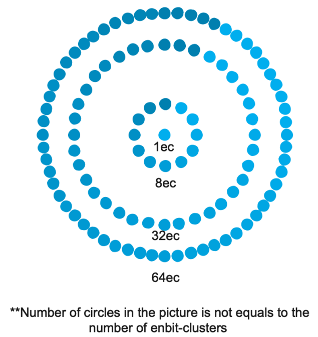

Figure 8: Picture of 2D geneton particle

Anti-Particle (SSD > $\sum E_h$)

The anti-particle structure will look similar to a 2D particle (Figure 8), except it will also have a tail in the movement's direction. The spin of anti-enbits (by creating friction against the graviton) will provide poise to keep the shape from tumbling and moving freely.

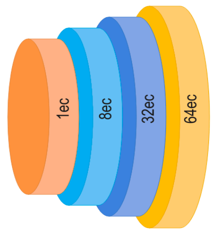

Figure 9: Anti-particle - view from the side

Standard Particle (SSD > $\sum E_h$)

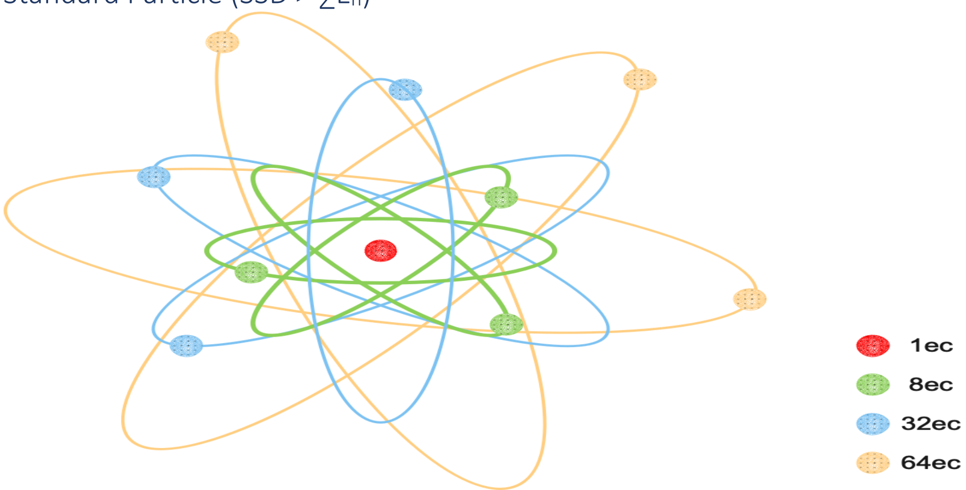

Figure 10: Standard particle - symmetry

Figure 10 is not the orbital diagram of the electrons. Instead, it is the alignment of the enbits inside a **single proton**. I will later theorise this is the structure that dictates the electron's orbital structure.

Each tiny sphere here represents a cluster of enbits, but the enbits belonging to the set would fill the entire orbit, rather than just occupying the dot as depicted in the picture.

Mass (m)

Even though this mass is the by-product of the enbit's suction/thrust, there is a subtle difference.

1) Mass Particle (elementary particle - Proton) – Mass of this particle is the product of the gravitational force (suction) of the enbits and the symmetrical alignment. I will cover this in more detail under the section "Visible Universe".

2) Anti-Particle (electron outside the atom) – Mass of this is the by-product of friction (pull from gravitons against the thrust) against the graviton. An anti-particle exposed to heat will lose the thrust, and intern the friction will reduce. The reduction in friction will result in the particle losing mass.

3) Massless particles (like the photon) – They will exhibit a small mass inside a gravitational well.

Charge (c)

1) Standard Particles - The charge here is the resultant suction, and we are currently denoting it with a positive value.
2) Anti-Particle – The charge here is the resultant thrust, and the value is negative.
3) 2D Particles – These have neither thrust nor suction, so the charge is 0.

Particle Interactions and Annihilation

Annihilation will be the future. The abundant gravitons (free independent enbits) will become a fuel source and a raw material. There is a separate section that covers the gravitons.

I will not go into too much detail about annihilation in this paper, but here are some basic rules we need to know.

1) Annihilation should only happen between the same type of particles and their twin particle. For example, an electron will annihilate with anti-electron (positron) but not with anti-proton or proton.
2) No annihilation for photons as both the anti and the standard particles is the same.
3) Particles will only merge with others in the same group, and this is required to keep the symmetricity intact. Meaning the proton and electron can't mix to form another particle, but the photon will combine with the other two particles. Proton will merge with positron and so on.
4) The same rules apply to enbits too.

Colour Confinement

The enbits outside geneton particles will not absorb or release photons. This process of **not** emitting the photons is called colour confinement - meaning,

➔ no photons → no colour → no visibility

Visible Universe

All human sensors play a part in how we perceive everything around us. Since we understand most of the other senses better, this section will only focus on the vision and the rigidness.

Folding and Mass of Standard Particle

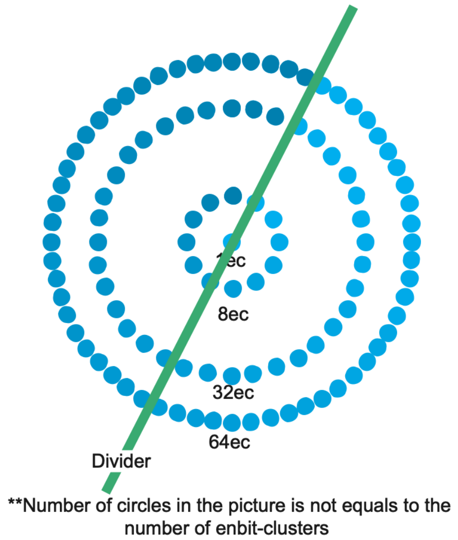

Figure 11: 3D particle folding

Figure 11 is precisely the same as Figure 8, with an additional divider in the middle. When it becomes SSD > $\sum E_h$ for a standard particle, the linear motion of enbits becomes angular velocity. This converted angular movement will make the enbits/clusters revolve around the "1ec" enbit-cluster in the centre. The new shape will form three spheres of enbit-cluster groups wrapping around one top of another, keeping the "1ec" in the centre, as shown in Figure 12.

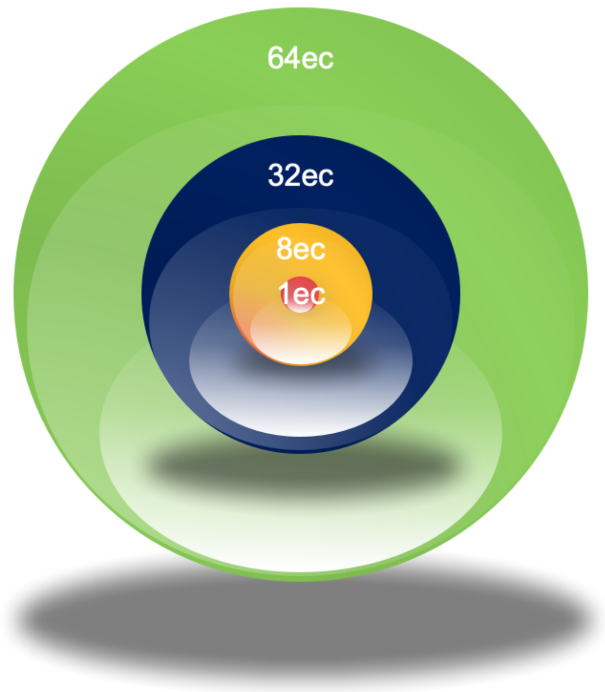

Figure 12: Folded 3D view

There are three main forces in action inside the symmetry,

1) The suction of the enbits – Strong force holds the opposing enbits together. Opposing enbits pulling each other make it stronger. The angular momentum keeps them apart.
2) The magnetic field of enbits – The weak force keeps the individual clusters together.
3) Repulsion – The enbit's angular momentum causes this.

The standard particles' mass and gravitational force are the by-products of the angular momentum against the strong force – more on this in part-2.

Unfolding and $E=mc^2$

When SSD = $\sum E_h$, the standard particle will unfold and become a 2D particle. Essentially the folded "c" (speed of light) will become linear.

$E=mc^2$ is effectively the 3D particles transforming into 2D particles.

Rigidness

The balance between the strong force and the angular momentum creates a force field around the standard geneton particle. This force field gives rigidness to these particles. When more of these particles bound together due to chemical properties, we get different state of substances like solid, liquid etc.

Colour

The geneton particles (except photons) absorb the photons. Due to its symmetrical and chemical binding makeup, the object will release a new set of photons. The heat signature and the intensity of the emitted photons defines the colours of the things.

The visible Universe essentially is the movie created by the heat signature (VIBGYOR - colour) and the intensity (brightness) of the photons redrawing almost at the speed of light (refresh rate).

Atomic Structure

${}^{1}_{1}H$ Atom

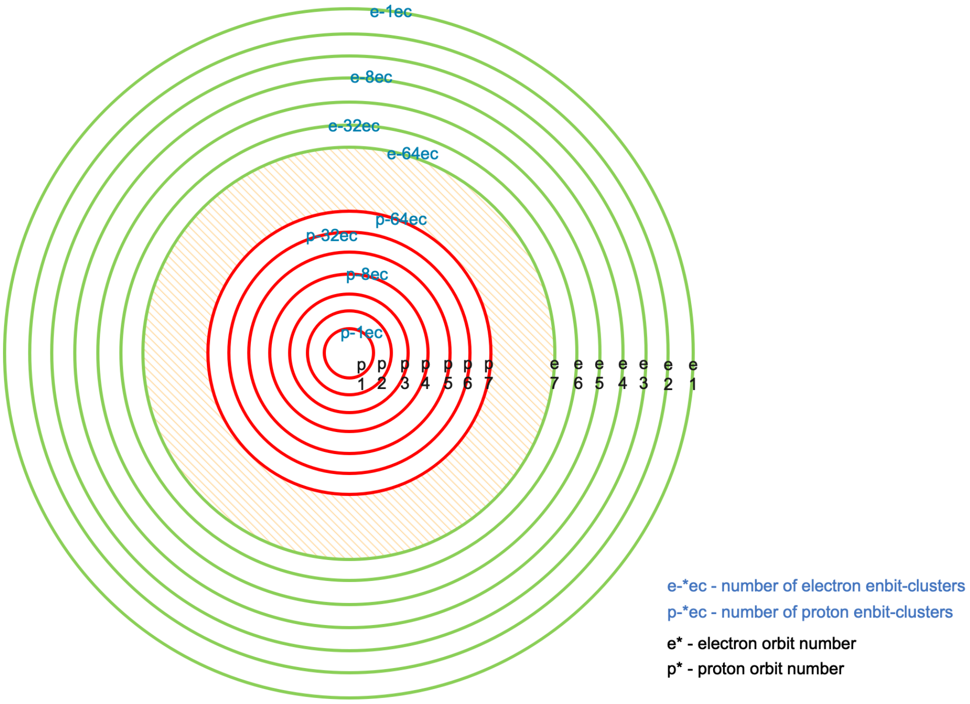

Figure 13: ${}^{1}_{1}H$ Atomic structure

Looks a bit different?
It will all become clear in a bit when I map this to the ionisation energy levels and explain what neutron is.

Why doesn't the hydrogen atom explode?
Electrons are anti-particles, and they will not react with standard particles, protons or neutrons.

Why are electron orbits numbered backwards?
The trapped electrons inside the atom fold in the standard particle's direction due to the protons' attraction and symmetry. Hence the electron orbits are numbered backwards.

In the section "Symmetry", I will use the protons' symmetry to explain the electron orbital and sub-orbital structure and ionisation energies.

The electrons inside the atom are trying to escape, and the protons are pulling it inwards, and they are in a balanced equilibrium state.

Why didn't they annihilate each other?
Annihilation only happens between the same type of particle and its twin.

What are these random numbers in the picture? And from where did they come?

1) 105
    a. "105 – 2^m" (m = 0,1,2,3,4,5,6) - is a prime number not equal to 2. Spreading 105 into portions of 2^m will return at least four portions, as shown below.
        ⇨ $105 = 1(2^0) + 8(2^3) + 32(2^5) + 64(2^6)$ – This breakdown will become more clearer when we look at Symmetry.
    b. Planck's constant without the units and decimal point = 662607015
        ⇨ 662607015 = 1 * 3 * 5 * 7 * 6310543 (432758th prime number)
        ⇨ 3 * 5 * 7 = 105

2) 7 – number of orbits – On every step, the number of enbit-clusters doubles and the equation max(2^n) <= 105 returns n = 7.

3) 1ec = 2^0ec, 8ec = 2^3ec, 32ec = 2^5ec and 64ec = 2^6ec – again I will cover this in more detail under section "Symmetry".

${}^{2}_{1}H$ Atom

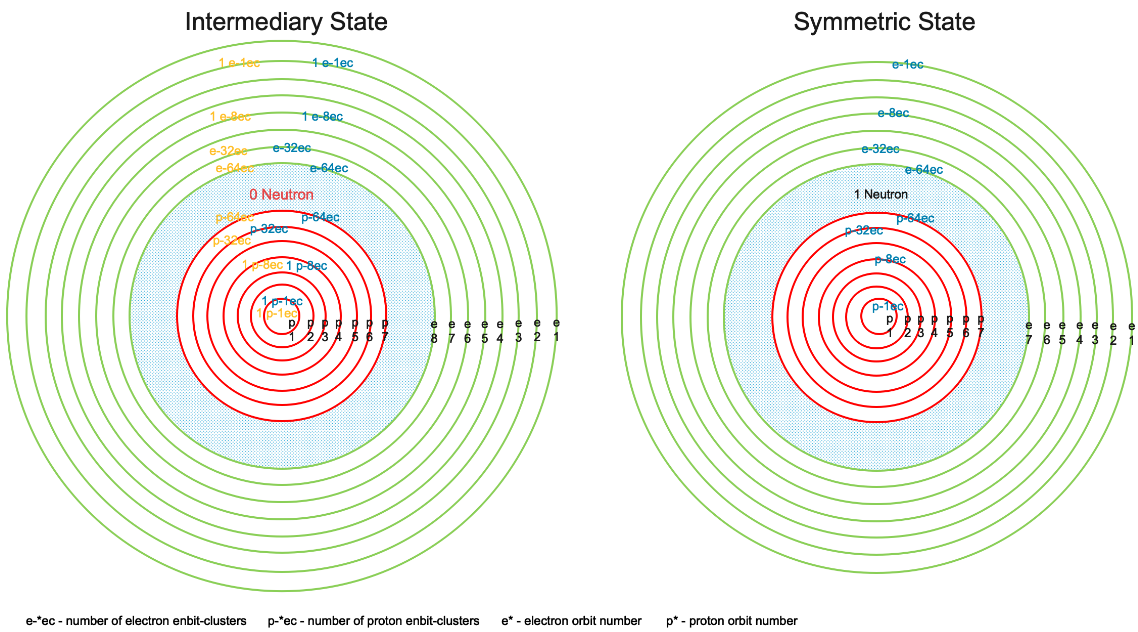

Figure 14: ${}^{2}_{1}H$ Atomic structure

Adding a proton and an electron pair to the hydrogen atom will create the **imaginary** intermediary state shown on the left of Figure 14.

The electron enbit-cluster will move one orbit down to reach a balanced state, as shown in the figure. The protons and the electrons pushed close together will create beta decay and form a neutron between the proton orbits and the electron orbits.

Neutron here will act as a DMZ (De-Militarised Zone) or charge neutral zone. As neutron is just the combined form of proton and positron (not electron - more on this in a bit), it is **not** a pure elementary particle.

There is a separate section devoted to neutron.

Beta Decay

I will cover Pauli exclusion principle and degeneracy under section “Hydrogen-4 or Helium-4 Atom”, for now, let’s understand beta-plus and beta-minus decay processes.

ß⁺ decay

The proton to neutron decay process is a 2-step process.

<u>Step 1:</u>
Due to the pressure created due to proton-electron attraction, an electron will flip and become a positron.

- ⇨ electron (anti) + graviton (standard - neutrino) → positron (standard)

<u>Step 2:</u>
Now, the two standard particles will combine to form a neutron,

- ⇨ proton (standard) + positron (standard) → neutron (standard)

This 2-step process is much more apparent in $ß^-$ decay.

ß⁻ decay

Again, the neutron to proton decay process is a 2-step process too.

<u>Step 1:</u>

- ⇨ neutron (standard) → proton (standard) + positron (standard)

<u>Step 2:</u>

- ⇨ positron (standard) → electron (anti) + graviton (standard - neutrino)

As you would have noticed, there are **no** anti-neutrino involved in any of the two processes. The graviton consumed in the beta-plus decay process and the graviton released in the beta-minus decay process are standard gravitons (neutrino).

Step 2 on beta-minus happens due to the graviton’s pressure on the positron as positron’s enbit substance is not strong enough to hold onto the flip – more on this under section “Neutron”.

^3_1H or ^2_2He Atom

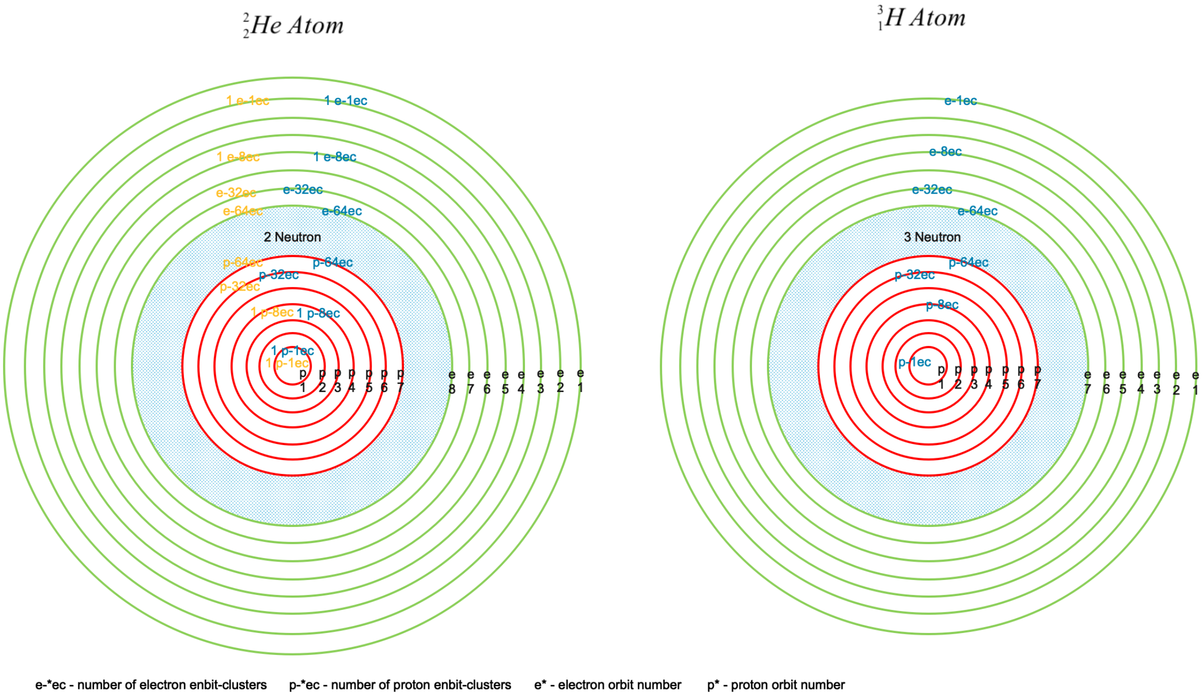

Figure 15: ^3_1H or ^2_2He Atomic structure

Depending on the amount of pressure/heat applied to the atoms in Figure 15, they will become one or the other. Introducing more pressure (or reducing the temperature), the helium-4 atom in Figure 15 will change to a hydrogen-4. When the pressure reduces or the temperature increases, the opposite should happen (electron capture).

Since the helium-4 atom above is more symmetric than the hydrogen-4 at room temperature, the hydrogen-4 atom will decay into helium-4.

The best way to picture this atomic structure is to think of all sub-atomic particles as Fermi gases and the proton to have more strong force than the neutron.

Ionisation Energy

All the different ionisation energies and orbit configurations will become more evident once we look at the symmetry and enbit-cluster arrangements.

The helium atom on the right side of Figure 15 has its last two enbit clusters in electron orbit 2. Hence it will require more energy to dislodge an electron from this atom compared to the hydrogen atom. This orbit change is due to protons pairing inside the nuclei.

Pauli Exclusion Principle and Degeneracy

From now on, we could explain the degeneracy using pressure/temperature exerted than Pauli's exclusion principle. More on this when we look at the neutron later.

Brief Astronomy

Now that I have discarded Pauli's exclusion principle-based degeneracy, I need to explain why Neutron Stars and White Dwarfs don't collapse. To understand this, first, we need to know how Stars form and their life cycle.

Further, if you wonder why I am starting a massive section on astronomy/cosmology, you would be surprised at the end when you find out how relevant it is.

Yellow Dwarf

The Yellow Dwarfs are nothing but massive Stars like the Sun.

Formation

The Stars form in the stellar nursery[10] due to pockets forming with a lack of gaseous pressure (Jeans instability). The dust in these pockets will start tumbling and create a twister. More of these twisters combining will create turbulence with enough heat (kinetic energy) in the vortex, making all atoms caught in it become Fermi gases and split into protons and electrons. The protons will move towards the centre of the vortex and the electrons outwards.

One turbulence will create more pressure imbalance in the molecular cloud. This imbalance will help, generation of more twister/turbulence in other places of the molecular cloud. This process will become a chain reaction. The black holes will make sure these chain reactions don't spiral out of control – more on this in a bit.

When the turbulence matures, it will create an accretion disk containing protons in the centre and the electrons on the outskirts. Below is a picture of an accretion disk.

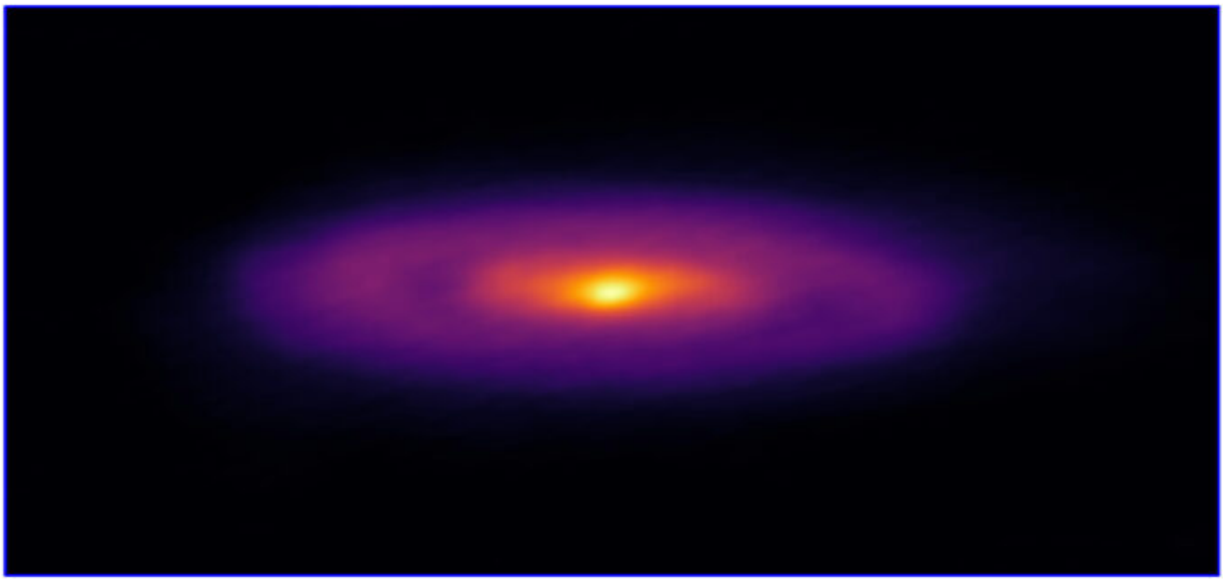

Figure 16: Accretion disk of a Protostar - Source [5]

In the beginning, the young Star will rely on the electron accretion disk to pull more mass. As the proton core grows larger, its gravitation will increase. While the resultant disk would shrink and the electrons will move towards the body, the increase in the core's gravitation will

[10] I am not going to cover the complete formation process here. If you are interested, you can find more information on this Wikipedia page [10].

continue to pull more masses. The accretion disk will gradually diminish, and the remaining electrons (the ones that escaped the black hole) will surround the Star, making it mature enough to leave the nursery. Further, the Star's rotation will also dampen due to its growing size and the breaks applied by the black hole.

In addition to the above, a massive Star will,

1) Swallow any small Stars that are too close to the core
2) Convert next furthest set of Stars to black holes
3) Force the distant ones to become Brown Dwarfs, and these will tag along with the Star and will become planets
4) The massive Star's black hole would also steal the black holes of the nearest protostars

I will cover the last few points above in detail in a bit.

Release or Delivery

The black holes created will combine and align. And once the black holes are powerful enough, they will pull outwards, dragging the Star system(/s) along. When these black holes reach a black hole cluster, it will settle the Star system(/s) in the galaxy supported by the cluster.

If the whole system were already a galaxy (or galaxies), it would travel independently.

When a galaxy leaves the nursery due to massive Stars maturing (when there is enough black hole thrust), it would also bring along other smaller sized Star systems.

Solar Fusion

Essentially the Sun or any Yellow Dwarf is a gigantic fat atom. There are a few subtle differences like,

1) Yellow Dwarfs are huge
2) Isolated
3) The Yellow Dwarf will have fewer electrons compared to protons, meaning Yellow Dwarfs are positive ions. This ratio difference is down to black holes and the Brown Dwarfs, consuming the electrons from the giant Star's accretion disk during the Star formation – more on this in a bit.

All that is happening in the Sun is down to a gigantic atom trying to eliminate the excessive protons to become symmetrically stable. As we already know, heavy atoms decay, the Sun having a supermassive nucleus in the centre will go through nuclear fusion.

If you think it is fission, not fusion, that happens with radioactive atoms, yes, it is, but the Sun's process involves two steps. The protons are trying to break out. In the process, they are colliding with each other, causing the fusion. So, the process is, the fission will create the free moving protons, and these uncontrolled protons will cause the fusion.

Figure 17 shows the fusion process in the Sun, but it shows the reaction as binary particle fusion. The fusion in the Stars will involve more particles at the same time. Meaning if the Sun's fusion process is capable enough to form Beryllium (Be), then the Sun should also produce Lithium (Li). A supergiant star should have the ability to make heavier atoms by fussing more protons. And all the newly created atoms will be melted back into fermi gas states during this phase due to the extreme surface temperature.

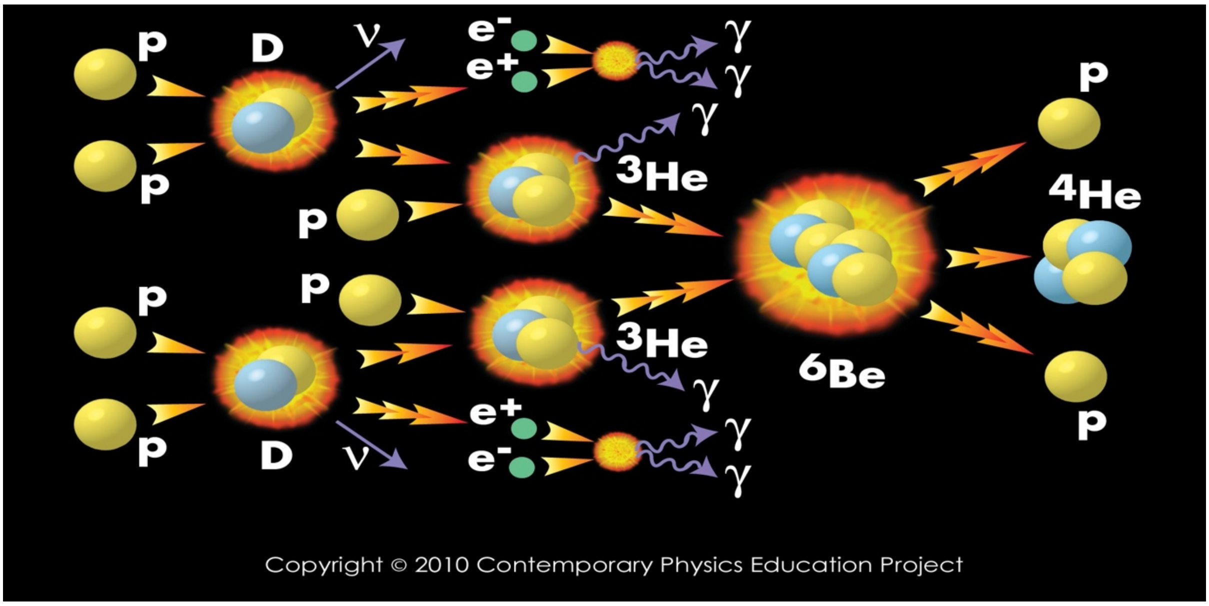

Figure 17: p-p Solar fusion chain - Source [6]

Considering the rest of the solar fusion process is well documented, let quickly look at the corona, which gives colour to the Sunlight and solar spots, which causes the solar cycle.

Corona

The electrons, in the outermost layer of the Sun, makes the corona layer. The Solar fusion, prominently a hydrogen fusion, will emit red coloured photons. When these photons reach the corona layer, they will interact with the electrons. The electrons absorbing the photons will release different coloured photons, making this layer glow (luminous effect) and the Sunlight an equal mixture of all frequency photons.

The electrons should be filling the atmosphere layer of the Sun, too. The electrons in this space should be at maximum energy state, so they will not interact with the photons (the reason for transparency of the atmosphere layer). Hence photon's colour should not be affected in this layer.

These heated electrons are the reason for the temperature difference between the photosphere and corona sphere.

Solar spot

Electrons on the outer surface (atmosphere) of the Sun will try to control the proton fusion by creating anti-neutron. Essentially, when the electron cloud finds a weak proton cluster produced due to the fusion, it will start forming anti-proton pockets. These pockets will grow and create a solar spot (or a mini black hole).

When there are enough solar spots, the imbalance caused to the proton core's symmetry will force the Sun to tumble. This tumble will cause a whirlpool effect and neutralise all the solar spots, and the whole process will start again. **This repeated cycle is the Solar cycle**.

The tumble of the proton core will create the solar storm, a fermi gas splattering.

Red Giant

Protons continuously losing energy will succumb to the pressure of the electrons. The newly created atoms will stabilise on the Star's surface. These new atoms and anti-neutrons on the surface would neutralise the proton core's gravitational pull and absorb the heat. This decrease in gravitation will allow the electrons to pull outwards.

Simultaneously, more prominent solar spots will also form. The electrons will produce anti-neutron by combining them with anti-proton. The Sun's photosphere will become anti-particles/atoms/protons lava.

The Sun will expand and engulf the closest planets. The loss of gravitational strength will force the distant planets to leave the system.

Now we are left with a massive red rock called the Red Giant. Let's use the diagram below to understand the rest of the Star formation/deformation flow.

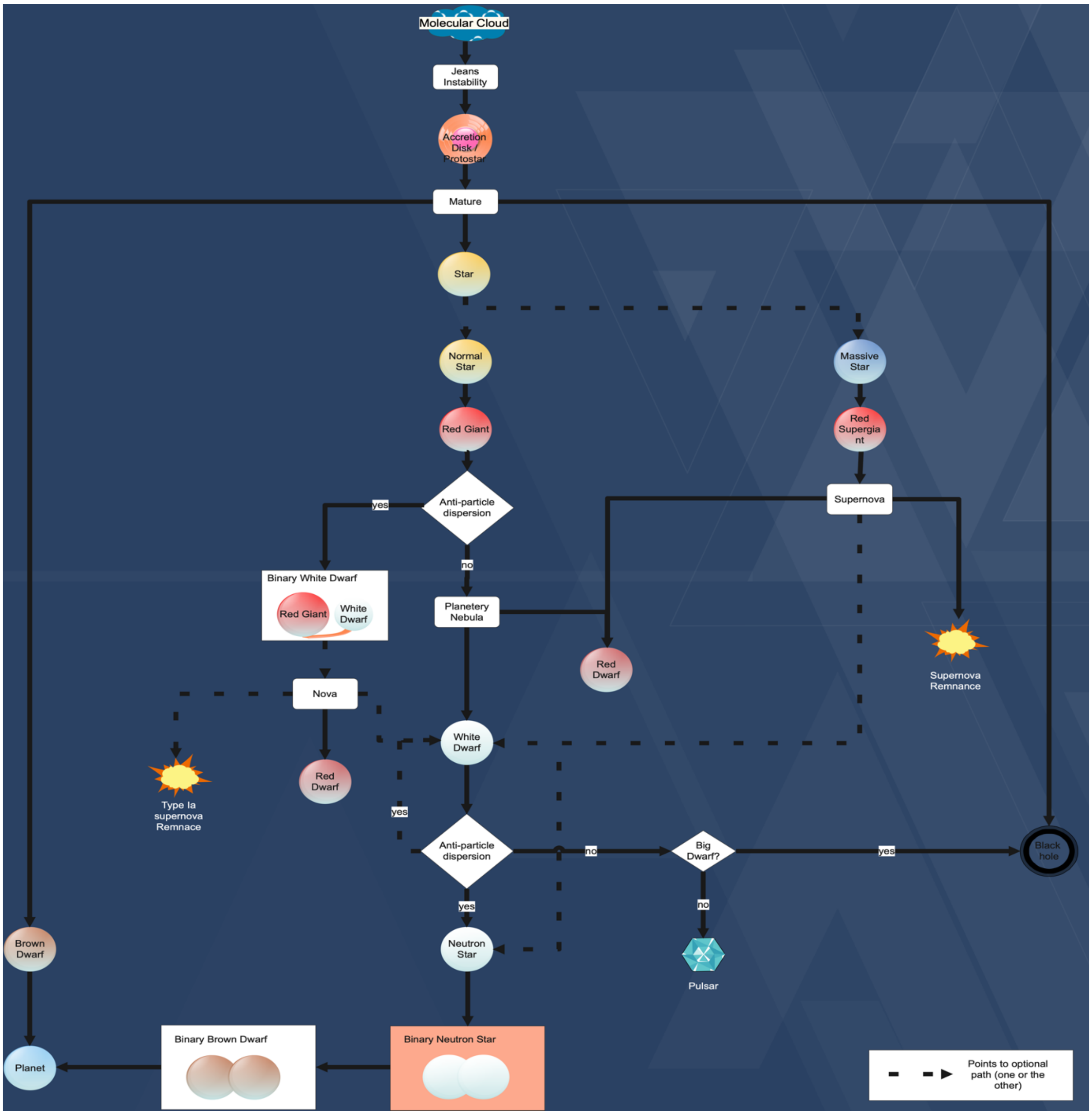

Figure 18: Stellar life cycle

Supernova

Massive Stars will hold their shape together against the degradation much longer and will end up erupting much violently, creating a supernova. The eruption will produce,

1) Red Dwarfs (quite a few of them) – These are the portions of escaped proton core.
2) White Dwarf/Neutron Star – The remainder of the original Star. Depending on the ratio of anti-particles vs protons left, the Star will become a Neutron Star or White Dwarf - more on these Stars in a moment.
3) Supernova Remnant – These are the eruption's debris, the atoms and the molecules formed during the fusion.

Small-Sized Star Deformation

The small-sized Star can deform in two ways,

1) Minor eruption – This will produce Red Dwarfs and White Dwarf. Since the discharge is not as violent as the massive Star, this shouldn't yield a Neutron Star.
2) Anti-particle dispersion – This is when the Star manages to remove its anti-particle shell by a tumble. This process will produce a Binary White Dwarf.

Binary White Dwarf

As shown in Figure 18, the dispersed anti-particles with a small proton core will become a White Dwarf. The Red Giant's gravitation will pull the White Dwarf towards it. The White Dwarf colliding with the Red Giant will create a Star fission. The fission will produce,

1) Few Red Dwarfs
2) A White Dwarf or a supernova remanence

Red Dwarf

The Red Dwarf is essentially an almost pure proton core. The Red Dwarfs will continuously fuse until it vanishes and becomes an atom. The fusion replenishes the Universe with gravitons.

White Dwarf

First off, no planets or stars can exist without a proton core.

A star becomes White Dwarf when its proportion of anti-particles is superior to the protons. The protons, continuing to fuse and losing energy, will enable the anti-particles (electron and anti-neutron) to convert more protons to anti-particle. This conversion, along with the proton losing energy, will reduce the gravitation of the core. The core losing the ability to hold onto the mass will force an anti-particle dispersion. The resultant Star could remain a White Dwarf or a Neutron Star depending on the proportion of anti-particles lost.

The anti-neutrons covering the surface and the electrons in the atmosphere will interact with the photons generated by the core's fusion. This interaction gives the glow to White Dwarf.

When the anti-particle ratio to the proton is too excessive in a White Dwarf, the core will become an anti-proton core. The anti-protons inside the condensed space will break symmetry (convert to anti-enbits) and become a black hole. The black hole will feed on the rest of the anti-particles and grow large.

During the star formation, the protostars at a distance, where the big Star will not engulf them but not far enough to become Brown Dwarfs, will also go through the same process and become black holes. These protostars starved of protons due to massive Star consuming all the protons will also have a rich supply of electrons from the arm of the Star's accretion disk. These protostars will temporarily become White Dwarfs and then black holes.

Since these black holes are of anti-enbits and the Star's core is standard particles, they will attract each other but will not merge. But these black holes will consume the electrons from the disk.

These black holes have a couple of functions,

1) As I mentioned before, these black holes will act as a propeller to pull the system out of the nursery.
2) These, along with the Brown Dwarfs consuming enough electrons, will create the proton-electron imbalance in the Star. This imbalance increases the size and the lifespan of the Star.

Given a White Dwarf didn't become a Neutron Star or a black hole and had survived all the anti-particle dispersions, the remaining Star will eventually become a Pulsar. Pulsar is an extremely small Neutron Star.

Neutron Star

A White Dwarf becomes Neutron Star when the proportion of the protons is higher than the anti-particles.

As I have already mentioned, the following processes create the Neutron Stars,

1) Supernova of the Red Supergiant Stars
2) Anti-particle dispersion of the White Dwarfs

A newly formed Neutron Star will have the same structure as the White Dwarf. In the beginning, the makeup will consist of a proton core, anti-neutron shell and electrons in the atmosphere. Since the electron pressure is lower, the anti-neutrons near the core will break into anti-protons and electrons. This decay will result in electrons emerging inside the shell near the core.

Now, the protons' fusion along with the trapped electrons will create all sorts of different atoms. These atoms will survive the heat as the heat generated by the Neutron Star's core is much less than the Yellow Dwarf.

The annihilation process (proton / anti-proton) will continue eroding the shell making the outer shell fragile. When the outer surface becomes too weak, the Star will split and become a Binary Neutron Star system or a large and small Star, small revolving around the large.

Brown Dwarf

Inside Neutron Star's shell, the process of annihilation, decay and fusion will continue and new atoms and molecules form. As the process reaches the surface, molecules will start forming on the exterior, and the Star's colour will gradually change to brown.

The process will continue in the Brown Dwarf until it becomes a planet or exoplanet.

This Brown Dwarf deformation process happening outside the nursery will result in an exoplanet and moons.

Any Binary Brown Dwarf system created by a Binary Neutron Star will break its orbit at some point when the core cools down. The resulting planets will continue their journey until they find shelter in a Star system or swallowed by a black hole.

Moons

A Brown Dwarf with a small satellite dwarf will become a planet and a moon.

Planets

In the section "Brown Dwarf", we looked at the exoplanet formation process. A similar process happens during the Star formation inside the nursery.

The smaller protostars, which are farthest away, so they don't get engulfed or converted into black holes, will become Brown Dwarfs first and eventually planets and moons.

Mercury, Venus, Earth and Mars would have gone through a more rigorous planet formation process in the nursery. Since they were much closer to the Sun than other planets, they would have had a sufficient electron supply.

Further, these protostars' surface heat would have been a lot higher than their core's temperature. This extra surface heat would have aided forming of all the different atomic elements in the periodic table. The heavy atoms would have immediately submerged into the surface, surviving the surface temperature.

Jupiter and Saturn are half matured protostars converted to planets. Both these planets still have the accretion disk. Being further away from the Sun than Jupiter, Saturn would not have gone through the proper planet formation process. This improper baking explains its low density, gaseous nature and the rest of its layered structure.

Pluto is a dwarf planet, and Uranus and Neptune could be,

1) Immature protostars
2) Stolen satellites from the Saturn
3) Dwarf planets
4) Stolen from another big Star

Black Hole

We have already covered the black hole formation in detail. Let's look at a bit more about the black hole itself.

1) A black hole is an accumulation of anti-enbits.
2) Black holes are always on the move unless they are held back by stellar systems.

The singularity or the vortex of the black hole is not visible due to the same quantum "colour confinement" phenomena associated with quarks.

The Universe has an intrinsic direction. The anti-enbits are going along with the flow. And the standard enbits are pulling in the opposite direction - more on this in part-3.

I will cover the black hole in more details in part-2, but for now, let's look at what is a Quasar.

Quasar

We have already covered why galaxies have these black holes in the centre. There is a balance between the galaxy's gravitational pull and the thrust of the black hole. This balance will ensure the galaxy will move along with the black hole.

When a galaxy or part of it exerts a strong gravitational pull concentrated on a small area of a large black hole, the exposed black hole's region will disintegrate. The anti-enbit in that section will become enbits, and the black hole will release a tsunami of enbits. The majority of the enbits will reach symmetry and form geneton particles, and the rest will stay gravitons.

Tidal Disruption Event

When a Star with enough anti-particle (White Dwarf) get close to a black hole, it will suck all the anti-particles from the object and leave the standard particle.

Since the Neutron Star consists of more standard particles than anti-particles, it will not be absorbed when it moves freely and reaches a black hole. Instead, the Neutron Star will orbit the black hole, similar to planets orbiting the Sun.

Destiny of Black Hole

The black holes supporting the galaxies align in a corn shape as shown below,

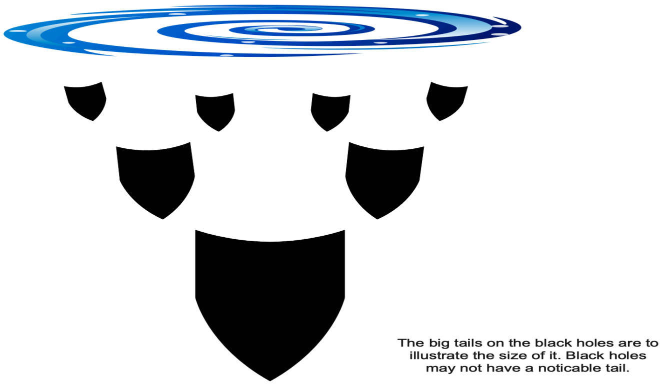

Figure 19: Black holes at the centre of the galaxy

When the smaller black holes in Figure 19 become strong enough to counter the galaxies gravitational pull, the big black hole will detach. The detached black hole will travel a lot faster and reach a place in space, where it will merge with other detached black holes, forming a gigantic black hole.

This new black hole will continue its journey towards the exit hole of the Universe. It will start folding inwards with nothing to hold its mouth open and become an almost point-like structure.

The point-like structure leaves the Universe, and when the force inside it becomes unsustainable, it goes boom, and a new Universe is born[11].

[11] I like to think the Universe is full of hidden clues. And the quasar jet is one such hint telling us about how did the Big Bang happen.

Symmetry

Single Geneton Symmetry – Atomic No: 1

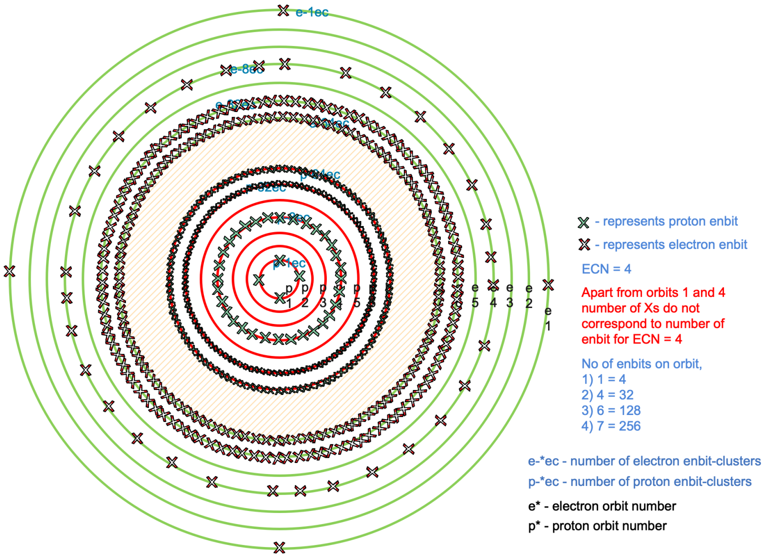

Figure 20: Hydrogen-1 enbit orientation

Figure 20 shows the symmetrical alignment of the enbits in a hydrogen-1 atom. The key to symmetry is enbit-clusters arranging themselves at a given distance, forming an equilibrium state[12].

Figure 21 below is the simplified version of Figure 20.

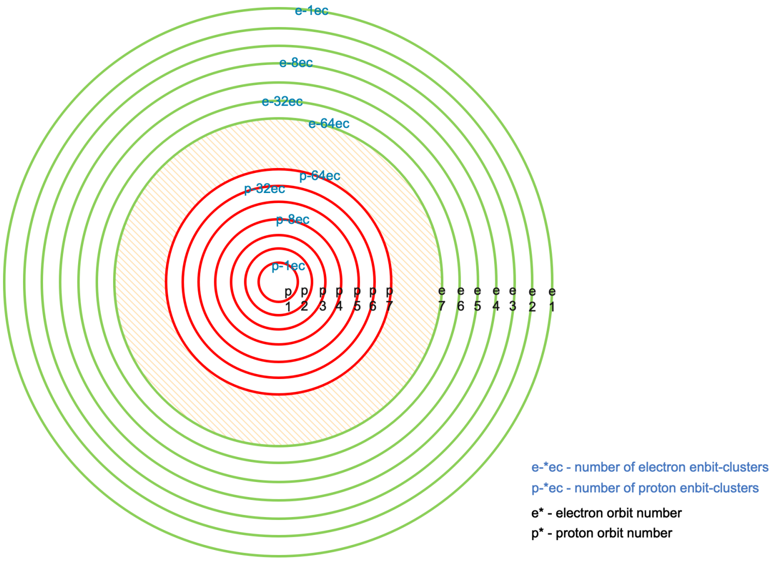

Figure 21: Symmetry and enbit-cluster distribution

Considering that the proton already occupies the smallest space possible and the electron is attracting the proton, in the beginning, the proton enbit-clusters should fill the highest orbits first.

Based on the logic explained above, the best breakdown of 105 enbit-clusters would be,
➔ $64(2^6) + 32(2^5) + 8(2^3) + 1(2^0)$

---

[12] I believe the enbit-clusters inside the proton core is more of an n-body problem. Hence, I am not quoting Coulomb's law here.

Supersymmetry: He – Atomic No: 2 (Magic Number)

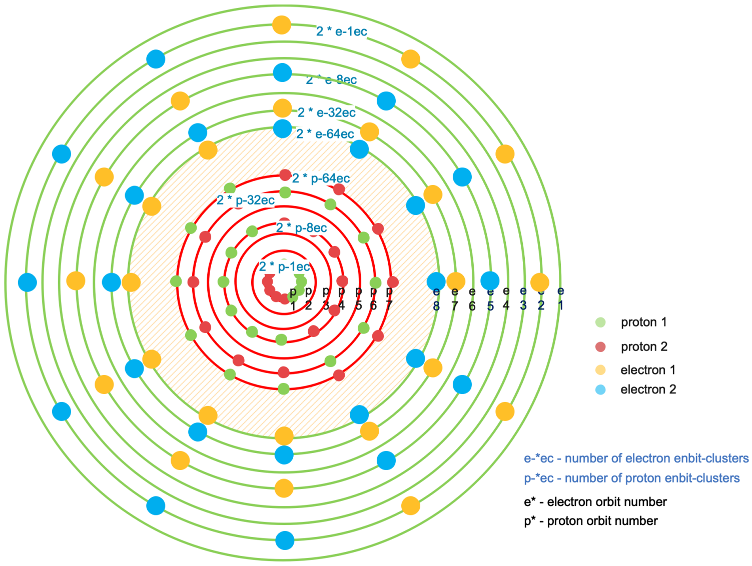

Figure 22: Symmetry helium atom

Figure 22 shows the symmetrical alignment of both the protons and the electrons of a helium atom.

A couple of things to note here are,

1) Since the electrons are anti-particles, they wouldn't have a defined orbital structure.
    a. New e8 orbit forms for electrons by pushing all other orbits upwards.
    b. The enbit-clusters in electron orbits e1 and e4 move down to orbits e2 and e5, respectively.
    c. The electron orbital configuration depends on the symmetrical alignment of the protons.
2) In contrast, the protons will always hold their orbital structure.
3) Enbit-cluster groups from both protons and electrons are aligning themselves to create a perfect pairing.

Since the enbit-clusters in electron orbit e1 have moved to orbit e2 and the nuclei's attraction would also have increased, the ionisation energy required to remove the first electron will be higher.

The diagram on the left in Figure 23 is the illustrative orbital structure of the above proton pairing.

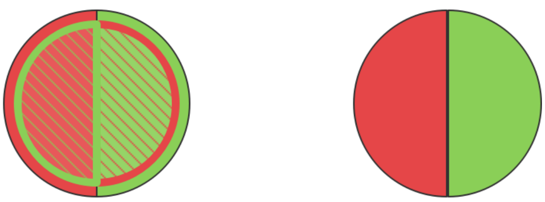

Figure 23: Proton orbital diagram - Helium

To keep things simple, going forward, I will use the picture on the right side of Figure 23 to show the orbital structure. **The halve sphere on the new image doesn't represent the density distribution of the proton's enbits. The picture is showing the reverse and matches the electron's density distribution.**

Symmetry: Li – Atomic No: 3

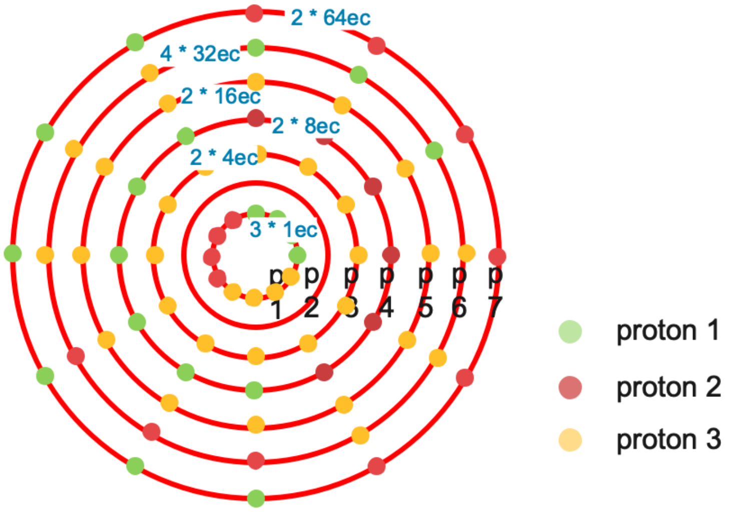

Figure 24: Symmetry - Lithium atom

Since the newly added proton, as is the case with the electron, is not creating a robust paring, it will require less ionisation energy to dislodge an electron.

Proton Layers and Orbital Shape

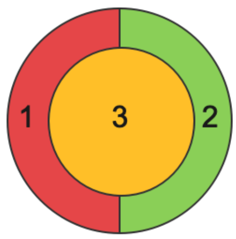

Figure 25: Proton orbital diagram - Lithium

Mapping the above structure in a table format is shown below.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 3	1	1 * 64	1 * 32		1 * 8			1 * 1
	2	1 * 64	1 * 32		1 * 8			1 * 1
	3		2 * 32	2 * 16		2 * 4		1 * 1
315		128	128	32	16	8		3

Table 4: Symmetry - Atomic No 3

A couple of points to note here are,

1) The proton's "1ec" enbit-cluster will always be in orbit p1
2) The two layers forming is highlighted in two separate colours above. The division of layers are as below,
    a. **Outer layer - Proton 1 and 2 -** *2 * 64 (P7), 2 * 32 (P6), 2 * 8 (P4), 2 * 1 (P1)*
    b. **Inner layer - Proton 3 -** *2 * 32 (P6), 2 * 16 (P4), 2 * 4 (P3), 1 * 1 (orbit 1)*
3) The protons on the outer layer will form a pair by aligning themselves in the opposite direction.
4) This separation of layers will also reflect in the shell model of the electron.

Electron Orbital Shape and Ionisation Energy

The corresponding electron arrangement will look like Figure 26.

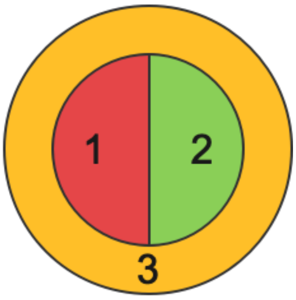

Figure 26: Electron orbital diagram - Lithium

EC Total	Electrons	e8	e7	e6	e5	e4	e3	e2	e1
105 * 3	1	1 * 64	1 * 32		1 * 8			1 * 1	
	2	1 * 64	1 * 32		1 * 8			1 * 1	
	3		2 * 32	2 * 16		2 * 4			1 * 1
315		128	128	32	16	8		2	1

Table 5: Electron orbits - Atomic No 3

As shown in Table 5, there is a valence electron on the electron's outer layer. This valence electron requires less ionisation energy to dislodge.

One more thing to note here is that understanding the electron magic numbers is much more straightforward when looking at the ionisation energy drop than the peak. From the perspective of an electron, an anti-particle, the lowest ionisation energy level is the best state - more on this in the upcoming sections.

Proton Magic Numbers and Supersymmetry

As shown in Figure 22, every enbit-cluster group from each proton is paired with each other, making perfect harmonically oscillating pairs whilst keeping their shapes intact.

The magic numbers appear when all enbits-cluster groups from every proton pair perfectly and oscillate in harmony.

Electron Magic Numbers

The "Noble gas numbers" arise when the proton core's outer layers extend and increase proton attraction. But as I explained before, I will define and use the electron magic number as,

➔ "Electron magic number" = "Noble gas atomic number" + 1.

Symmetry: Be – Atomic No: 4

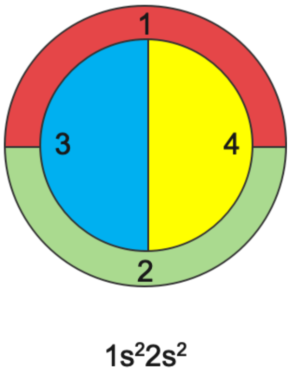

Figure 27: Proton orbital diagram - Beryllium

Figure 27 shows the symmetry of Beryllium. Since more space is there in the inner orbits, the protons fill the inner layer and not create supersymmetry. There are two separate pairs in each layer, but they are not binding together.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 4	1	1 * 64		2 * 16		2 * 4		1 * 1
	2	1 * 64		2 * 16		2 * 4		1 * 1
	3		2 * 32		4 * 8		4 * 2	1 * 1
	4		2 * 32		4 * 8		4 * 2	1 * 1
420		128	128	64	64	16	16	4

Table 6: Symmetry - Atomic No 4

First Ionisation Energy

Since the outermost orbit has extended, the protons in the inner orbits will fill the space liberally. Proton 3 and Proton 4 populate the area like shown in Table 6. These additional protons concentration, on edge, will apply more attraction to the electron. This extra attraction will result in a more than usual increase in first ionisation energy.

Symmetry: Atomic No: 5, 6 and 7

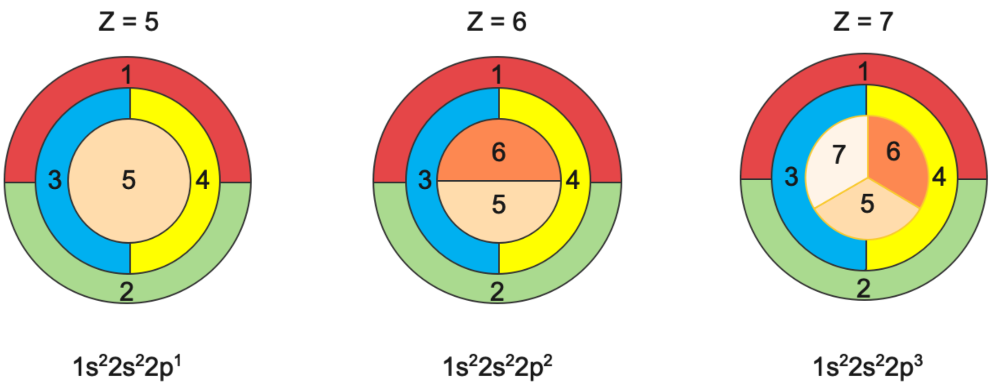

Figure 28: Proton orbital diagram - Atomic No 5, 6 and 7

Supersymmetry won’t apply to 5 and 7 as at least one “1ec” cannot have a pair.

A point to note here is,
The outer orbits double on extension. Inner orbits have pressure from the outer orbits, so they don't need to double all the time. Meaning outer orbit's enbit-cluster groups count will take the form of,

➔ 2^n (n = 1, 2, 3 etc.),

whereas inner orbits will have m where,

➔ $0 < m <= 2^{2n}$ ($m = 1, 2, 3 \ldots 2^{2n}$)

When "m" passes 2^{2n}, it will push up and double up the outer orbit.

Below is the breakdown of atomic number 6. It is starting to cramp up in the inner layer.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 6	1	1 * 64			2 * 8	4 * 4	4 * 2	1 * 1
	2	1 * 64			2 * 8	4 * 4	4 * 2	1 * 1
	3		2 * 32		2 * 8	4 * 4	4 * 2	1 * 1
	4		2 * 32		2 * 8	4 * 4	4 * 2	1 * 1
	5			4 * 16	2 * 8	4 * 4	4 * 2	1 * 1
	6			4 * 16	2 * 8	4 * 4	4 * 2	1 * 1
630		128	128	128	96	96	48	6

Table 7: Symmetry - Atomic No 6

First Ionisation Energy

More protons in the inner orbits increase the proton attraction and intern the ionisation energy.

Electron Orbital Shape

Another point to note here is how this symmetry corresponds to the electron subshell model,

1) Atomic No 5 – $1s^2\ 2s^2\ 2p_x^1$
2) Atomic No 6 – $1s^2\ 2s^2\ 2p_x^1\ 2p_y^1$
3) Atomic No 7 – $1s^2\ 2s^2\ 2p_x^1\ 2p_y^1\ 2p_z^1$

Each subshell corresponds to a layer in protons symmetry. Here, the outer layer maps to "s", and the inner layer maps to "p" would be reverse for electrons.

If we picture the spheres in 3D and arrange them in reverse order (inner to outer and vice-versa), we will get the electron's "s" and "p" subshell shape. Since the electron orbitals correspond to the ones we already know and align with the protons orbital structure, I will only focus on the proton orbital structure.

Supersymmetry: Atomic No: 8 (Proton Magic Number)

Figure 29: Proton orbital diagram - Atomic No 8

The table below shows there is no room for the 8^{th} proton without extending the outer orbit.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 8	1	1 * 64		2 * 16			4 * 2	1 * 1
	2	1 * 64	1 * 32				4 * 2	1 * 1
	3		1 * 32	2 * 16		8 * 4	4 * 2	1 * 1
	4		1 * 32	2 * 16		8 * 4	4 * 2	1 * 1
	5				8 * 8	8 * 4	4 * 2	1 * 1
	6				8 * 8	8 * 4	4 * 2	1 * 1
	7		1 * 32	2 * 16			40	1 * 1
	8							
840		128	128	128	128	128	88	7

Table 8: Symmetry without extension - Atomic No 8

The table below shows the newly realigned supersymmetry after the outer orbit extension.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 8	1	1 * 64		2 * 16		2 * 4		1 * 1
	2	1 * 64		2 * 16		2 * 4		1 * 1
	3		2 * 32		4 * 8		4 * 2	1 * 1
	4		2 * 32		4 * 8		4 * 2	1 * 1
	5		2 * 32		4 * 8		4 * 2	1 * 1
	6		2 * 32		4 * 8		4 * 2	1 * 1
	7	1 * 64		2 * 16		2 * 4		1 * 1
	8	1 * 64		2 * 16		2 * 4		1 * 1
840		256	256	128	128	32	32	8

Table 9: Symmetry - Atomic No 8

A shortened version of the table will look like the one below,

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 8	Outer A (2)	2 * 64		2 * 16	4 * 8	2 * 4	4 * 2	2 * 1
	Outer B (2)	2 * 64		2 * 16	4 * 8	2 * 4	4 * 2	2 * 1
	Inner A (2)		4 * 32	2 * 16	4 * 8	2 * 4	4 * 2	2 * 1
	Inner B (2)		4 * 32	2 * 16	4 * 8	2 * 4	4 * 2	2 * 1
840		256	256	128	128	32	32	8

Table 10: Symmetry shorten version - Atomic No 8

The supersymmetry on the above table forms, as described below,

1) The outer layers A and B are pairing at p7.
2) Both outer and inner layers are pairing at p5, p4, p3 and p2.
3) Inner layers are pairing at p6.
4) p1 contains 1 "1ec" from each proton

First Ionisation Energy

The cohesiveness and robustness in the proton core will apply lesser than usual attraction to the electrons. This reduction in pull will result in lower than expected ionisation energy.

Symmetry: Atomic No: 10

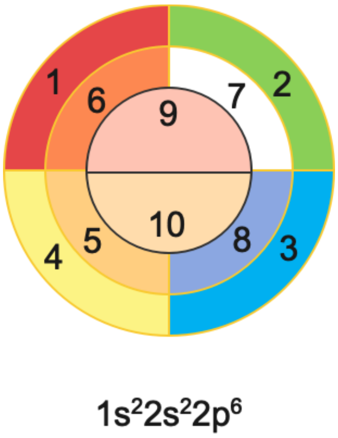

Figure 30: Proton orbital diagram - Atomic No 10

Atomic number 10 will add two more entries in the inner orbits to Table 10 and not form supersymmetry.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 10	1	1 * 64		2 * 16		2 * 4		1 * 1
	2	1 * 64		2 * 16		2 * 4		1 * 1
	3		2 * 32		4 * 8		4 * 2	1 * 1
	4		2 * 32		4 * 8		4 * 2	1 * 1
	5		2 * 32		4 * 8		4 * 2	1 * 1
	6		2 * 32		4 * 8		4 * 2	1 * 1
	7	1 * 64		2 * 16		2 * 4		1 * 1
	8	1 * 64		2 * 16		2 * 4		1 * 1
	9			4 * 16	4 * 8	2 * 4		1 * 1
	10			4 * 16	4 * 8	2 * 4		1 * 1
1050		256	256	256	192	48	32	10

Table 11: Symmetry - Atomic No 10

Electron Magic Number: Atomic No: 11

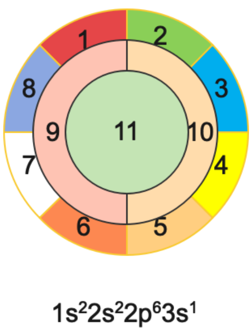

Figure 31: Proton orbital diagram - Atomic No 11

Since there is not enough room to add a new proton, the outer orbit should extend. As you can see, in this case, the extension is happening at atomic number 11, not at 10, the reason for using the ionisation energy drop to explain the electron magic number than the peak.

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 11	Outer A (4)	4 * 64	4 * 32		4 * 8			4 * 1
	Outer B (4)	4 * 64	4 * 32		4 * 8			4 * 1
	Inner A (2)		4 * 32	4 * 16		4 * 4		2 * 1
	Inner B (1)			4 * 16	4 * 8		2 * 4	1 * 1
1155		512	384	128	96	16	8	11

Table 12: Symmetry – Atomic No 11

First Ionisation Energy

A single proton in orbits p5 to p1 corresponds to an electron in e7 to e1 orbits. The ionisation energy required to remove this single valence electron in the outer orbit of the Na (Z=11) should be almost equal to the Li (Z=3).

Symmetry: Atomic No: 12

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 12	Outer A (4)	4 * 64	4 * 32		4 * 8			4 * 1
	Outer B (4)	4 * 64	4 * 32		4 * 8			4 * 1
	Inner A (2)		4 * 32	4 * 16		4 * 4		2 * 1
	Inner B (2)		4 * 32	4 * 16		4 * 4		2 * 1
1260		512	512	128	64	32		12

Table 13: Symmetry – Atomic No 12

Inner orbits are not forming perfect pairing to create supersymmetry.

Symmetry: Atomic No: 16

Outer Layer: 8
Inner Layer: 4
Innermost Layer: 4

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 16	1	1 * 64	1 * 32				4 * 2	1 * 1
	2	1 * 64	1 * 32				4 * 2	1 * 1
	3	1 * 64	1 * 32				4 * 2	1 * 1
	4	1 * 64	1 * 32				4 * 2	1 * 1
	5	1 * 64	1 * 32				4 * 2	1 * 1
	6	1 * 64	1 * 32				4 * 2	1 * 1
	7	1 * 64	1 * 32				4 * 2	1 * 1
	8	1 * 64	1 * 32				4 * 2	1 * 1
	9			4 * 16		8 * 4	4 * 2	1 * 1
	10			4 * 16		8 * 4	4 * 2	1 * 1
	11			4 * 16		8 * 4	4 * 2	1 * 1
	12			4 * 16		8 * 4	4 * 2	1 * 1
	13				8 * 8	8 * 4	4 * 2	1 * 1
	14				8 * 8	8 * 4	4 * 2	1 * 1
	15				8 * 8	8 * 4	4 * 2	1 * 1
	16				8 * 8	8 * 4	4 * 2	1 * 1
1680		512	256	256	256	256	128	16

Table 14: Symmetry – Atomic No 16

The inner layers form supersymmetry, but the outer layer is not binding with the inner layer. The orbit p6 needs to extend and host additional 4 protons on that layer to create proper pairing and binding. Even if I spread "4 * 16ecs" on p5 orbit between p5 and p6, the p6 will not have 2^n pairing to form supersymmetry.

Electron Magic Number: Atomic No: 19

The layer at p6 would have extended at atomic number 18. The layer breakdown of atomic number 19 is,

- Outer Layer A: 8
- Outer Layer B: 8
- Inner Layer: 2
- Innermost Layer: 1

Without looking at the symmetry, it is evident by looking at the layer breakdown above that the atomic number 19 (18 is a noble gas number) is an electron magic number.

EC Total	Protons	p7	p6	p5	p4	p3	p2	p1
105 * 19	1	1 * 64		2 * 16		2 * 4		1 * 1
	2	1 * 64		2 * 16		2 * 4		1 * 1
	3	1 * 64		2 * 16		2 * 4		1 * 1
	4	1 * 64		2 * 16		2 * 4		1 * 1
	5	1 * 64		2 * 16		2 * 4		1 * 1
	6	1 * 64		2 * 16		2 * 4		1 * 1
	7	1 * 64		2 * 16		2 * 4		1 * 1
	8	1 * 64		2 * 16		2 * 4		1 * 1
	9		2 * 32	2 * 16			4 * 2	1 * 1
	10		2 * 32	2 * 16			4 * 2	1 * 1
	11		2 * 32	2 * 16			4 * 2	1 * 1
	12		2 * 32	2 * 16			4 * 2	1 * 1
	13		2 * 32		4 * 8		4 * 2	1 * 1
	14		2 * 32		4 * 8		4 * 2	1 * 1
	15		2 * 32		4 * 8		4 * 2	1 * 1
	16		2 * 32		4 * 8		4 * 2	1 * 1
	17			4 * 16	4 * 8	2 * 4		1 * 1
	18			4 * 16	4 * 8	2 * 4		1 * 1
	19				8 * 8	8 * 4	4 * 2	1 * 1
1995		512	512	512	256	112	72	19

Table 15: Symmetry - Atomic No 19

Supersymmetry: Atomic No: 20 (Magic Number)

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 20	Outer A (8)	8 * 64	4 * 32	8 * 16	4 * 8	8 * 4		8 * 1
	Outer B (8)	8 * 64	4 * 32	8 * 16	4 * 8	8 * 4		8 * 1
	Inner A (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner B (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
2100		1024	512	256	128	128	32	20

Table 16: Supersymmetry - Atomic No 20

Supersymmetry explanation,

1) Outer layers A and B are pairing at p7 and p5
2) Both outer and inner layers are pairing at p6, p4 and p3
3) Inner layers are pairing at p2

Proton Magic Numbers

Instead of going through the rest of the atomic numbers one by one, let's use a shortcut. Since the supersymmetry only happens once per every extension of the outer layers, we can use the following logic to find the next supersymmetry from the current one,

1) Start from the current supersymmetry alignment.
2) Extend the outer layers from inner to outer (one extension at a time).
3) Fill and realign the inner orbits to form a perfect pairing and binding between the layers.
4) Repeat the step 2) and 3) until supersymmetry is found.

Supersymmetry: Atomic No: 28 (Magic Number)

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 28	Outer A (8)	8 * 64	4 * 32	8 * 16	4 * 8	8 * 4		8 * 1
	Outer B (8)	8 * 64	4 * 32	8 * 16	4 * 8	8 * 4		8 * 1
	Inner A (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner B (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner C (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner D (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner E (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
	Inner F (2)		4 * 32		4 * 8	8 * 4	8 * 2	2 * 1
2940		1024	1024	256	256	256	96	28

Table 17: Supersymmetry nonaligned - Atomic No 28

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 28	Outer A (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer B (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Inner A (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner B (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Innermost A (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Innermost B (2)			8 * 16	8 * 8		8 * 2	2 * 1
2940		1024	1024	512	256	64	32	28

Table 18: Supersymmetry - Atomic No 28

Steps,

1) Table 17
   a. The blue area is the supersymmetry alignment of atomic number 20.
   b. The red area shows the first extension.
   c. Since the first extension would not produce 2^n (n=1, 2, 3…) number of "32ec" enbit-cluster groups (there are 2^n protons binding here), it requires a second extension as highlighted in green.
2) Table 18 shows the realigned symmetry.
3) Atomic number 28 is the next supersymmetry or proton magic number.

Supersymmetry: Atomic No: 50

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 52	Outer A (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer B (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer C (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer D (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Inner A (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner B (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner C (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner D (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Innermost A (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Innermost B (2)			8 * 16	8 * 8		8 * 2	2 * 1
5460		2048	2048	768	384	128	32	52

Table 19: Symmetry - Atomic No 52

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 50	Outer A (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer B (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer C (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer D (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Inner A (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner B (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner C (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner D (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Innermost A (1)				8 * 8	8 * 4	4 * 2	1 * 1
	Innermost B (1)				8 * 8	8 * 4	4 * 2	1 * 1
5250		2048	2048	512	384	192	16	50

Table 20: Supersymmetry - Atomic No 50

Steps,

1) Table 19
   a. The blue area is the supersymmetry alignment of atomic number 28.
   b. Since orbits p7 and p6 have already maxed out, outer orbits need extending. The red area shows the first extension.
   c. The first extension is not producing 2^n number of "32ec" enbit-cluster groups, so it requires a second extension as highlighted in green.
   d. Now there are 52 protons.
2) Table 20
   a. The orbit p5 having an inner layer (starting in orbit p4) cannot break the 2^n extension rule, to be in supersymmetry.
   b. Removing 2 protons and pushing the other 2 to the inner layer realigns the symmetry.
3) Atomic number 50 is the next supersymmetry or proton magic number.

Symmetry: Atomic No: 58

Following the logic, I should also try doubling the layer in p5 (adding 4 * 2 protons). This extension will require having "8 * 2ec" in p2 orbit, which will break the supersymmetry since it already has "4 * 2ec" from the innermost layer.

Supersymmetry: Atomic No: 82

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 82	Outermost A (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost B (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost C (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost D (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost E (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost F (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost G (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outermost H (4)	4 * 64	2 * 32	4 * 16	4 * 8			4 * 1
	Outer A (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer B (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer C (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer D (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer E (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer F (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer G (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer H (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer I (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer J (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer K (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer L (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer M (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer M (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer O (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer P (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer Q (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer R (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer S (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer T (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer U (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer V (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer W (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Outer X (1)		2 * 32		4 * 8	2 * 4		1 * 1
	Inner A (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner B (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner C (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner D (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner E (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner F (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner G (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner H (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner I (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner J (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner K (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner L (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner M (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner N (1)			4 * 16	4 * 8	2 * 4		1 * 1

	Inner O (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner P (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner Q (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner R (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner S (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner T (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner U (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner V (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner W (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Inner X (1)			4 * 16	4 * 8	2 * 4		1 * 1
	Innermost A (1)				4 * 8	2 * 4	32 * 2	1 * 1
	Innermost B (1)				4 * 8	2 * 4	32 * 2	1 * 1
8610		2048	2048	2048	1856	400	128	82

Table 21: Supersymmetry - Atomic No 82

All this long table telling us is that the atomic number 82 is the last proton magic number. As you can see, the protons in the innermost layer now align backwards (orbit p2 can have “32*” as p7 has already extended 32 folds). Trying to double any layer now will break the pairing or binding on another layer.

The difference between proton and neutron is that neutron will form new orbits similar to the electron. Hence neutron will have more magic numbers than the proton.

Electron magic numbers

Atomic No: 37

EC Total	Layers	p7	p6	p5	p4	p3	p2	p1
105 * 37	Outermost A (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outermost B (8)	8 * 64	8 * 32		8 * 8			8 * 1
	Outer A (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Outer B (4)		8 * 32	8 * 16		8 * 4		4 * 1
	Inner A (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Inner B (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Inner C (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Inner D (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Inner E (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Inner F (2)			8 * 16	8 * 8		8 * 2	2 * 1
	Innermost (1)				8 * 8	8 * 4	4 * 2	1 * 1
3885		1024	1024	1024	576	96	104	37

Table 22: Electron magic number - 37

Steps,

1) The blue area is the supersymmetry alignment of atomic number 28.
2) There is enough room to extend the layer in orbit p5. The orbit p5 will extend to maximum capacity.
3) Now the new proton highlighted by the red corresponds to a valence electron.

Atomic No: 54, 86, 118

The picture below shows the first 20 **proton** symmetry against the subshell model. Since this model correlates with the electron subshell model, we can use the subshell model to explain the rest of the electron magic number as we do already.

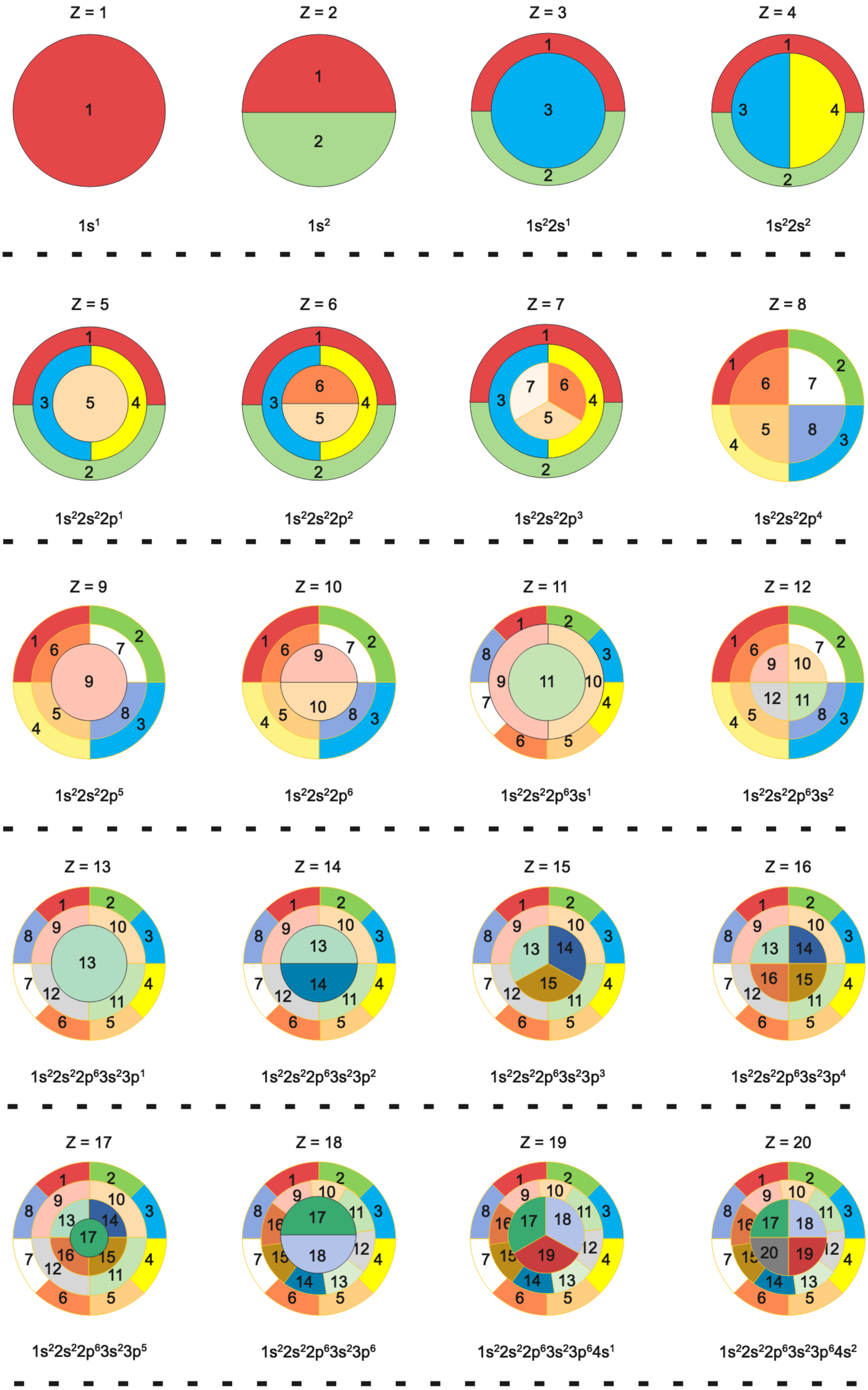

Figure 32: Proton shell model

Lanthanides

Atomic Number	Ecs Total	Orbit 7 (64ec)	Orbit 6 (32ec)	Orbit 5 (16ec)	Orbit 4 (8ec)	Orbit 3 (4ec)	Orbit 2 (2ec)	Orbit 1 (1ec)	Average Outer Electrons
55 * 105	5775	32	64	96	8	4	4	55	1
56 * 105	5880	32	64	96	16	16	0	56	2
57 * 105	5985	32	64	96	32	8	4	57	3
58 * 105	6090	32	64	96	32	32	8	58	4
59 * 105	6195	32	64	112	16	16	28	59	3
60 * 105	6300	32	64	112	32	16	16	60	4
61 * 105	6405	32	64	128	16	16	4	61	3
62 * 105	6510	32	64	128	32	8	8	62	1
63 * 105	6615	32	64	128	32	32	12	63	2
64 * 105	6720	32	64	128	32	64	0	64	3
65 * 105	6825	32	64	128	32	64	52	65	4
66 * 105	6930	32	64	128	64	32	40	66	3
67 * 105	7035	32	64	128	64	64	28	67	4
68 * 105	7140	32	64	128	96	32	16	68	3
69 * 105	7245	32	64	128	128	2	0	69	1
70 * 105	7350	32	64	128	128	16	24	70	2
71 * 105	7455	32	64	128	128	32	44	71	3
72 * 105	7560	32	64	128	128	64	32	72	4
73 * 105	7665	32	64	128	128	64	84	73	5

Table 23: Lanthanide breakdown

The lanthanide series occurs due to outer orbits (7, 6, and 5) maxing out and protons filling the inner orbits, as shown in Table 23. The yellow area in the table highlights the number of enbit-clusters in the innermost orbits (4, 3, 2 and 1).

Since the atomic number 55 is the electron magic number, the orbit p5 would have doubled from 32 to 64 (the reason for the table showing 96 is, one of the outer layers would have populated the rest of the 32). This extension allows the rest of the protons to occupy the inner orbits (outer for the electrons).

Since the outer orbits (protons') are locked up, the radius change is minimum. The expected increase has started already at 69 after the expansion, but at 72, it goes past four valence electrons and continuing.

<u>Formula</u>

1) Splitting of enbit-cluster groups in the yellow area might **not** be accurate but not of concern as it is irrelevant in this context.
2) No of Protons * 105ec = 32 * 64ec + 64 * 32ec + (96 + 16k) * 16ec + 2^l * 8 * 8ec + 2^m * 4ec + 2 * n * 2ec + No of Protons * 1ec
3) Where k, l, m, n ∈ {0,1,2,3 ... }
4) At 60 and 65, it will not push up as there will be some enbit-clusters from the outer layer occupying the inner one. At 69, it will push up as it is a full extension (doubling up) of orbit 4.
5) The "average outer electron count" is calculated as total enbit-clusters in the yellow area divided by 105 and rounded up.

Electron pairing

Free moving electrons will only form pairs, as shown in Figure 33 below.

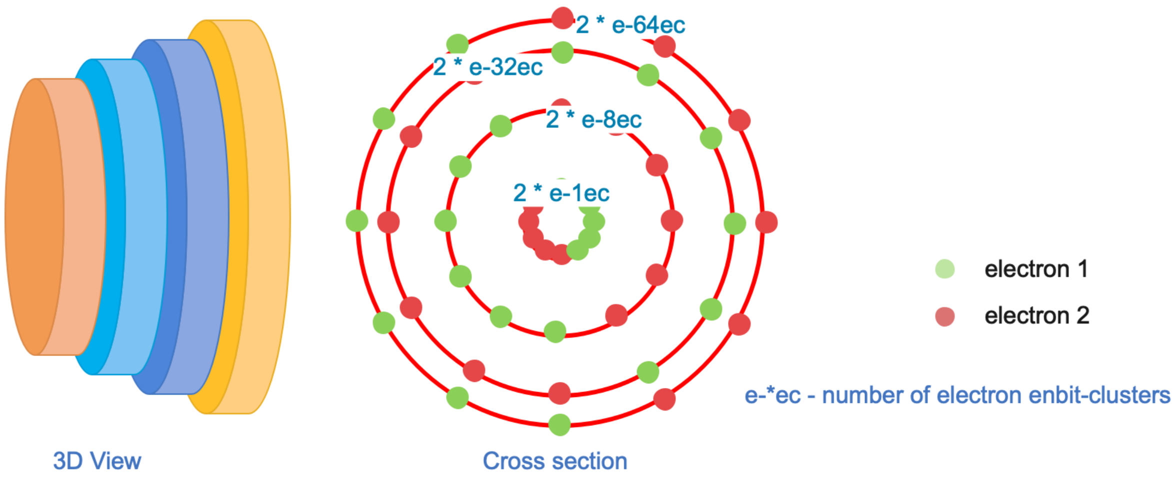

Figure 33: Electron pairing

Neutron

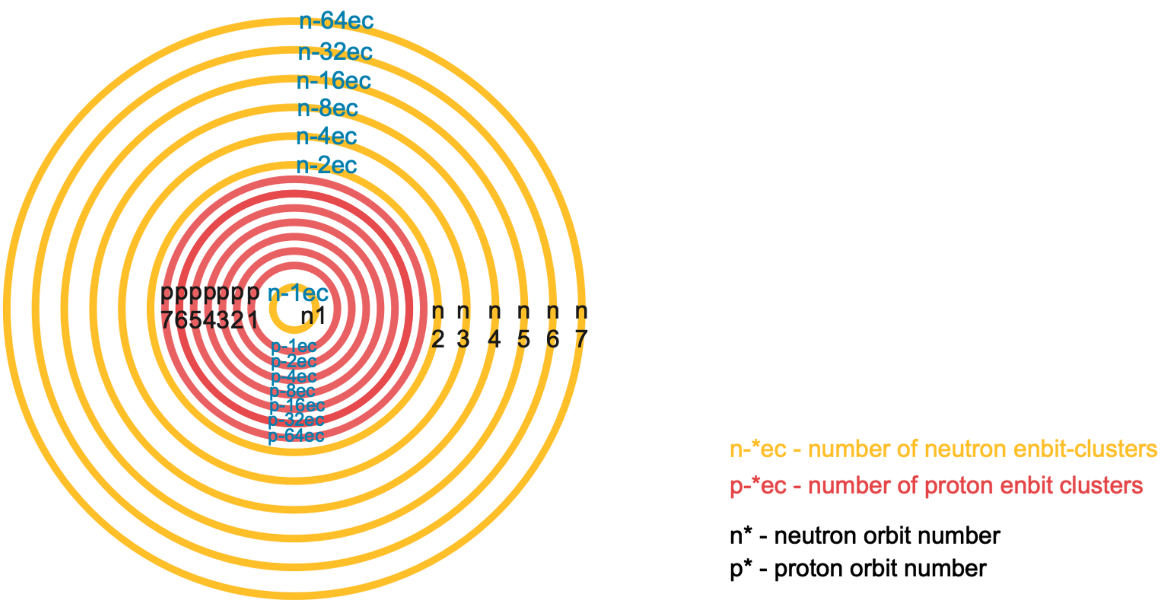

Figure 34: Neutron symmetry in nuclei

<u>Suction Dampening</u>

When the electron flips to combine with the proton during the beta decay, the electron's thrust will act against the proton's suction. Both electron and proton will compromise, and the moment the electron flips enough to become a positron, it will merge with the proton and become a neutron.

The compromise will reduce the neutron's suction, making it almost charge less. Since the mass is the balance between the suction and the angular momentum, this suction loss instigates increased neutron mass.

Further, this loss of the suction would also allow protons to push the neutron's three large enbit-cluster groups out, as shown in Figure 34. Now the neutron's "1ec" group will experience more pressure from the pushed-out neutron's and the proton's enbit-clusters. The pressure will squeeze the neutron's "1ec", moving it to the centre.

This arrangement will ensure a robust nucleus. Now placing the electrons on the outskirts explains the degeneracies. The Pauli exclusion principle should hold as no two enbits in symmetry should have the same states simultaneously. But the principle shouldn't apply any pressures.

Since the neutron is a standard particle, it will follow the same symmetrical alignment rules as the proton. Except it should form new orbits due to the electron attraction and proton repulsion.

Standard Model

A quick summary,

1) Photon is not a boson. It is a particle.
2) 64ec, 32ec and 8ec map to the 3 Quarks.
3) 1ec – Higgs particle.
4) Supersymmetry – 3 (SU (3)) enbit-cluster groups (Lie Groups) rotating in SO (3) plane. There is this paper [7] by Richard Herrmann, which explains the proton magic number.

Enbit === Axion?

First, the name enbit comes from the fact,

1) There are only two types (binary choice), anti and standard.
2) It is the bits that make a particle.
3) These bits carry energy.

In appendix A, I have explained how to create enbits using dipole magnets, called it Mbits and postulated the existence of it[13].

I am not sure whether Axion is the enbit or the mbits, so I decided to keep it separate.

[13] I will also postulate how these mbits materialises in part-3 of this paper series "Mbits and Beyond".

Heat, Photon and Graviton

Heat (h)

The heat is the kinetic energy stored in enbits which works against the suction or the trust.

Heat Radiation

Heat radiation is a particular type of photon with almost zero density. The total energy in a single heat radiation geneton is equal to Planck's constant. The heat radiation's magnetism is so low that it can only jump between particles (via the gravitons) when they are nearby, or the graviton density is strong enough.

Oscillation

Heat causes the geneton particles to vibrate. All particles that are not at absolute zero temperature will vibrate.

Standard Particle

The standard particle at high temperature will expand, and the vibration will also increase. A solid substance will go through the following state change (certain elements may skip some states) when the heat rises,

1) ~~Solid~~
2) Liquid
3) Gas
4) Plasma
5) Fermi Gas (proton and electron)
6) 2D Geneton (unfolding)
7) Enbits

A standard particle fired at high speed will have a vibration and a linear motion, which will form a transverse wave.

Anti-Particle (Electron)

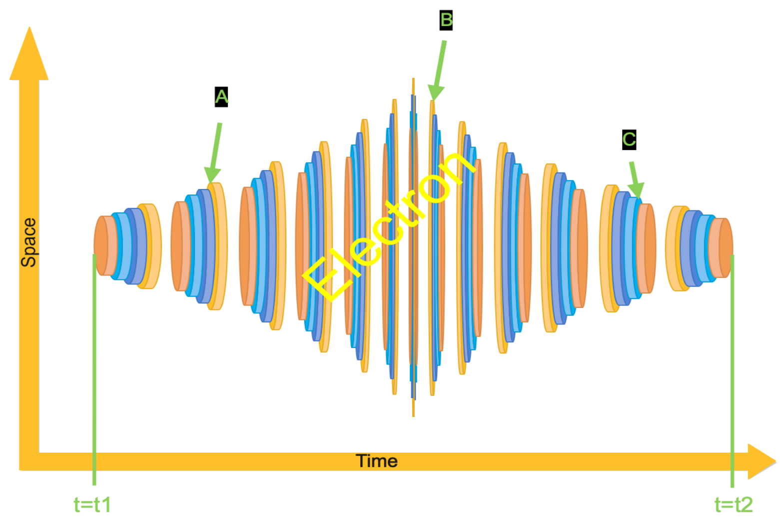

Figure 35: Anti-particle oscillation

Figure 35 is the same picture we saw in the introduction. As per the theory, a free moving electron should become stationary at some point when the temperature increases. This freezing would happen when SSD = $\sum E_h$.

Photon Oscillation

The photons, 2D particles, with SSD < $\sum E_h$ can't shrink or expand. The photons will vibrate due to the heat, and linear motion will make it form a transverse wave. The whole particle should oscillate except the "1ec". The "1ec" should act as the equilibrium position.

Polarity (p)

The photon oscillation is a transverse wave, and it will have polarity.

Photon Spin

When the photon does not have a circular polarity, the whole photon should not spin. Instead, this spin should be the result of individual enbits' spin.

Photon Pairing

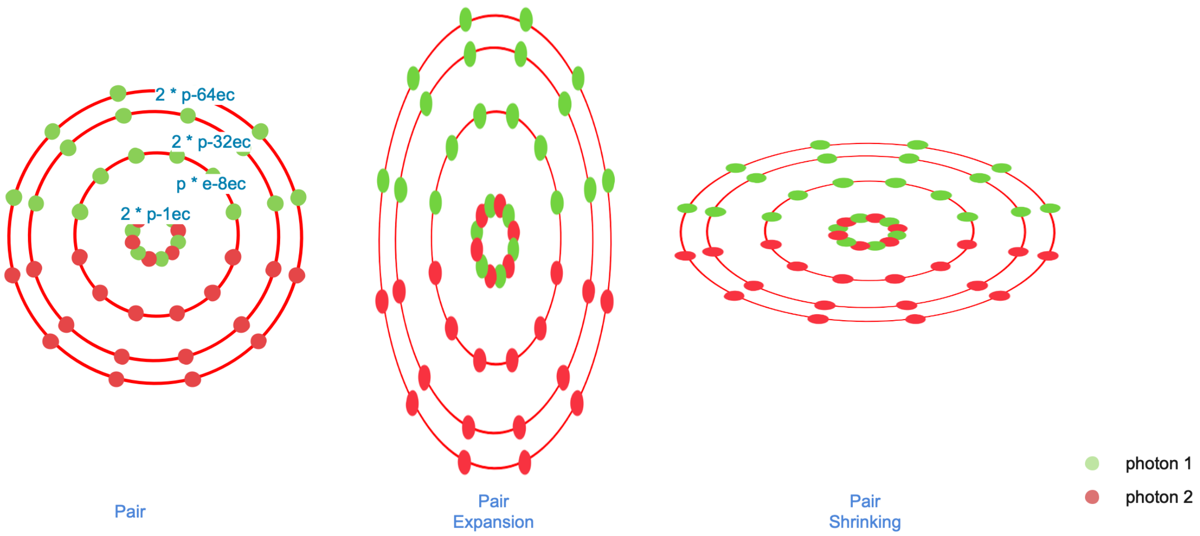

Figure 36: Photon pairing and oscillation

Since the photon energy is at max state, the pairing and the paired oscillation will appear, as shown in Figure 36.

Photons are 2D particles, and they should only involve in pairing. And they should pair up when they are of opposite phase or polarity and have the same heat signature.

Photon Transmission

The photon not having a thrust will need something to give direction to its linear motion.

Further, if the Big Bang created the enbits, we cannot expect all enbits to become geneton particles. And there is also this missing matter (dark matter).

Graviton

Graviton is a subject I will cover in detail in part-2. In this paper, I will categorise all the independent enbits that are not part of a geneton particle as gravitons. The reasons behind grouping all the independent enbits as gravitons are,

1) I don't think there is a dedicated particle/matter that constitutes gravity.
2) Instead, all these enbits that are out there not forming a geneton particle provide the repulsion between the objects and carry the magnetic fields.
3) Even if the mbits do exist in pure form, they will not make a difference to gravitation, as their impact would be negligible.
4) Further, this graviton will answer most of the general relativity questions in part-2 of this paper series.

Here is a quick summary of some of the topics covered in part-2.

1) Redshift – This is down to these gravitons knocking off a quantity of heat energy when the photons pass through a gravity well (a high-density graviton cluster).

2) Gravitational lensing – It is the gravitons that guide the photon's linear motion in a given direction. The gravitational lensing is down to light getting pulled towards the massive objects. Owing to their high gravity, a high graviton concentration developed around these big objects causes the change in direction.

3) CMB (Cosmic Microwave Background) radiation – This is the resonance created by the Big Bang or any massive cosmic event. The presence of these vibrations in the graviton enables us to reconstruct the pictures like the one in Figure 37. And the graviton's presence and interactions explain the quantum fluctuation on the right below.

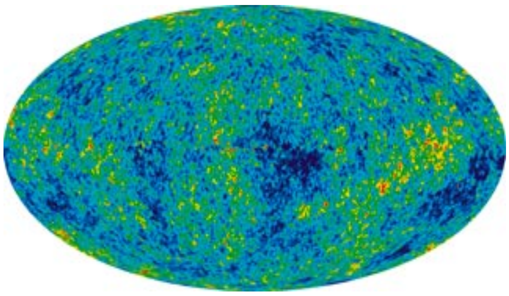

Figure 37: Big Bang – Source [8]

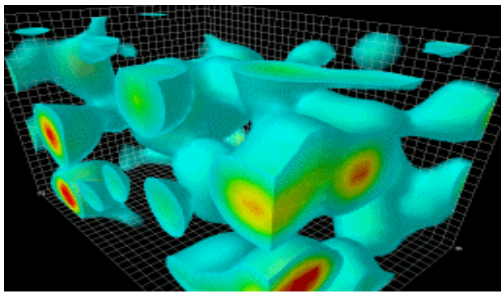

Figure 38: Quantum fluctuation – Source [9]

These graviton vibrations, the gravitational radiation will cause disturbances in giant antennas. These disturbances agitating the electrons in the sensors (antennas) results in electromagnetic waves. Photons don't carry the CMB radiation (or vibrations). The gravitons and their waves would have travelled way faster ($\approx c^2$) than the speed of light when the Big Bang occurred. Another reason for keeping electromagnetism confined to atoms.

4) Gravitational Wave – Both CMB and gravitational waves are oscillation of gravitons. The difference is analogous to a ball dropping (gravitational wave) vs an earth tremor (CMB).

The concepts covered here and the explanation of light in the introduction form the basis of part-2.

Quantum Demystification

Double Slit Experiment

The results of the double-slit experiments are down to,

1) Electrons – It is down to the free electron (particle) oscillation (not electromagnetic wave)
2) Photons – The transverse wave movement of the photons causes it.
3) Tiny particles – Small particles (or any particle with enough energy) will behave like protons. The result is down to their transverse wave movement.

Planck's Constant

Planck's constant is proportional to the number of enbits in a geneton particle. The value is the smallest amount of energy required to increase the heat of a geneton particle. Therefore, it should be the total energy of a single heat radiation quanta (geneton particle).

Schrödinger's Equation

Schrödinger's equation should come with a "use with care" disclaimer. The equation is more of a transformation than equality. Though the energy is conserved on both sides of the conversion, interpreting scalar energy conservation as more than it is will yield weird results.

The ψ function essentially represents the location of the enbits at any given time, a dispersion wave.

Saving Schrödinger's Cat

Unfortunately, the cat has died of old age, as is Schrödinger's concept.

Heisenberg's uncertainty principle

This section only covers Heisenberg's usage of the observer effect to explain the quantum uncertainty. This uncertainty arises from the fact that the particles are absorbed when taking the measurement. Below are a couple of theoretical resolution to the problem,

1) For electrons – Increasing the heat will slow the electrons down and eventually freeze them. We could apply enough heat until the electron freezes and do the measurements by analysing the setup.
2) For photons – A properly setup crystal (using geneton symmetry) or a graviton vortex should trap a photon. By amplifying the effect photon causes to the vortex, we can determine the photon's properties.

Superposition

A photon in motion is a transverse wave that will always have polarity (may also have a circular polarity when it vibrates in every direction). The polariser's chemical and symmetrical makeup alters (or may not interfere at all in certain conditions) the photon's polarity.

This polarisation, along with experiments performed on a large set, results in some peculiar conclusions. Confusions also arise from treating photons and electromagnetic waves as one.

Entanglement

When two photons are a pair, they will always have the opposite polarity and same energy signature, regardless of when they paired. The entanglement is nothing but a pairing of photons.

Quantum Tunnelling

The tunnelling problem arises due to us treating these barriers as unbreakable and impenetrable. With the theory explained in this paper, we cannot create an impassable blockade. Below are a couple of ways a geneton particle can penetrate through a barrier,

1) Intrusive – This happens when the particle is small enough to squeeze through the chemical and symmetrical gab.
2) Forcefully – Here, the particle would combine with the barrier's particle due to the pressure, and a new particle will form on the other side to re-establish the symmetry.

Uncovered Phenomena

I tried to cover as much basic as possible to prove how well this new theory addresses all the mysterious concepts and beliefs. I am pretty sure there are a plethora of things that need answering. All I can say is this, the theory should hold, so when we encounter a new phenomenon, we should try and explain it with this theory. This approach would help us scrutinise and fine-tune this theory rather than dwelling on a Misfit Science.

Conclusion

The Universe

If I take a black and white picture (rough) of the cross-section of the Universe, it will look somewhat like Figure 39,

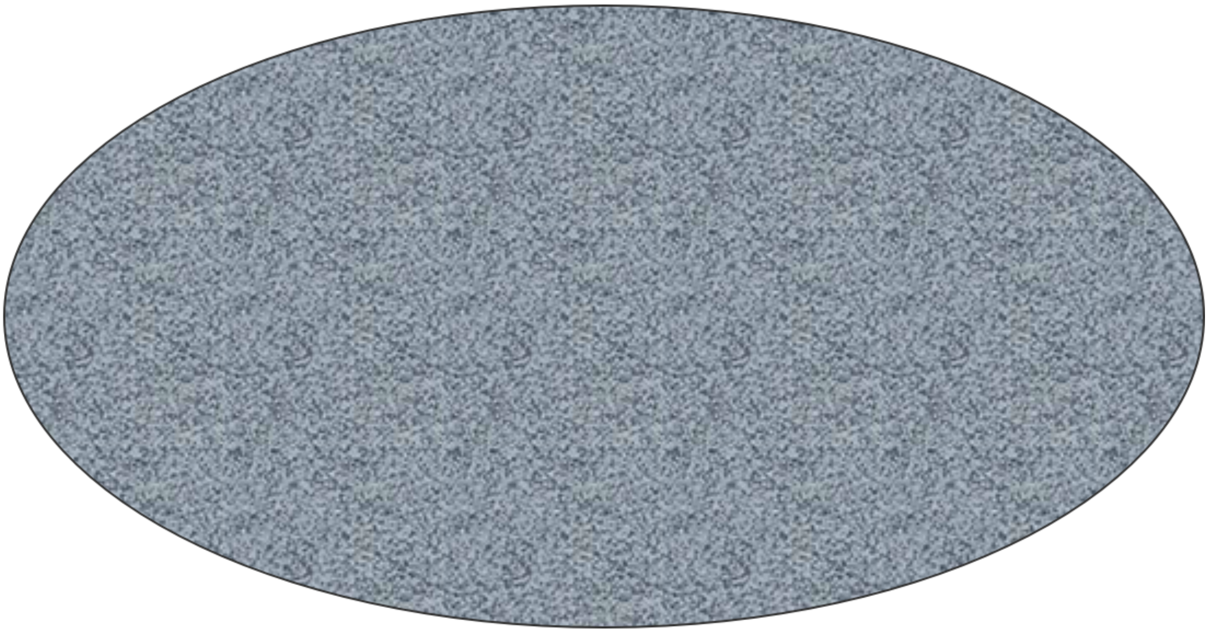

Figure 39: The Universe - rough black and white image

Assuming the camera is sophisticated enough to capture both particles and bits, the black coloured area would be the void space (nothingness). And the mbits and enbits should constitute the white patches.

Regarding the mbits, the chances of having them in their purest form would be almost zero. The mbits would have combined with other mbits to form either symmetrical or unsymmetrical enbits. So, the categorisation would become symmetrical and unsymmetrical enbits than mbits and enbits. With this, I can represent the inanimate Universe as,

$$Z = \int \acute{e}$$

The next couple of parts of this paper series will cover,

1) Einstein's catastrophe - will address the concepts such as time dilation, spacetime continuum and general relativity.
2) Mbits and Beyond – In this part, I am looking into concepts such as could this whole inanimate Universe business just be the dust cloud of the Big Bang, fighting against the void vacuum pressure using the energy it gained from the blast. Is it just a massive blast that is ongoing?

Appendix A: Mbits

Disclaimer: The concepts covered in this section are from part-3 of this paper series, and part-3 is still a work in progress.

The picture below shows a hypothetical enbit made of dipole magnets.

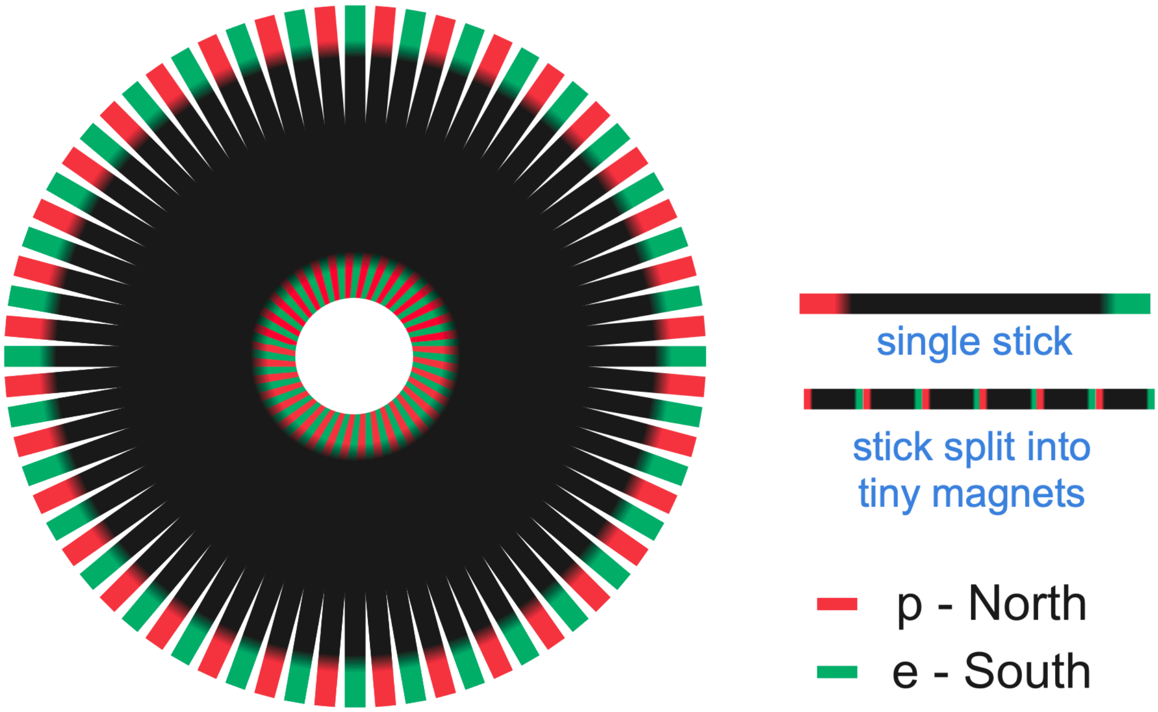

Figure 40: Enbit made of dipole magnets

Here the dipole magnet sticks are arranged in an alternating direction in a circle. Now, I can replace the individual bars with tiny magnets. When the magnets are small enough, I could use more of these tiny magnets to fill in the gaps to form the circular shape (or a shape of a galaxy).

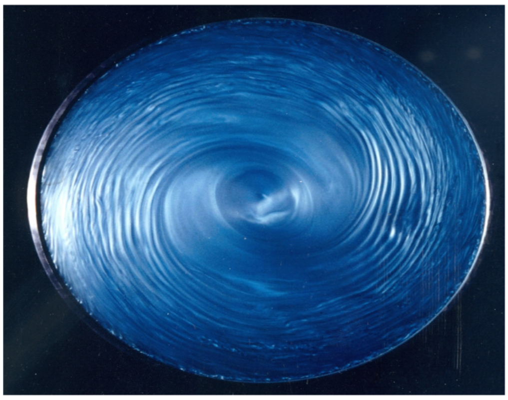

Figure 41: Enbit vortex

In part-3, I am looking into how the alignment of mbits could create standard enbits and anti-enbits and their spins.

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Equations

Figures

Tables