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I-Theory: A Unifying Quantum Theory?

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Abstract

This paper gives an overview of a new theory called the "I-Theory", in the context of several accepted theories in physics and cosmology. This paper reviews the salient features of the "I-Theory", which introduces new particles like I, S_∞ and A_1 particles and provides a fuller understanding about Dark Matter, Dark Energy, Matter/Anti Matter and the four fundamental forces. "I-Theory" introduces a new concept of the "quality" of energy with White, Black and Red matter formed with regard to the frequency level of the energy vibration. The authors discuss the main features and controversies of the Standard Model, General Relativity, Big Bang, and Supersymmetry and attempt to answer some of the unsolved questions. It is proposed that the "I-Theory" can successfully encompass all major theories and thereby becomes the theory of the whole, the Unifying Theory.

Keywords

I-Theory, I-Particle, Standard Model, Supersymmetry, Special Relativity, General Relativity, Big Bang, Dark Matter, Dark Energy, Matter and Antimatter

1. Introduction

The aim of science is to describe Nature's law. Nature, in its entirety, consists of the subatomic particle, atom, molecule, organ, organism, planet, galaxy, galaxy group, supercluster, filament, and in effect, the entire universe.

There is no shortage of theories to describe Nature's law, but all fall short of describing it in its entirety. All of the commonly accepted theories are in fact imperfect theories, based on limited knowledge and limited observation. If they were complete, then disputes would not take place, and unanswered questions would also be answered. We are still searching, therefore, for a Unifying Theory which satisfies all scientific questions and describes Nature's law perfectly.

A correct Unifying Theory would start with the lowest common denominator: the basic quantum of energy; or more precisely, the point at which everything starts, the fundamental building brick. The I-Theory is proposed here as such a Unifying Theory.

The I-Theory's main assumptions are:

- The commonly accepted "elementary particles" are not, in fact, elementary. The true elementary particle constitutes quarks, leptons and bosons. This elementary particle is called the "I-particle".
- The I-particle is vibrating.
- The I-particle is electrically polarized.
- The I-particle is made of 3 different matters.

2. The I-Theory

2.1. The I-Particle Model

The universe which the poets describe as "infinite, unknowable and indescribable", emerges from one's knowledge, exists in one's knowledge, and merges back in one's knowledge. In other words, everything is data. The entire universe is knowable due to this fact, but awareness about the fundamental element of the universe is a prerequisite.

To understand any information, a clear idea about the fundamental element responsible for information is required. In mathematics, digits are the basis of all the diverse applications, and without understanding digits, one cannot arrive at a clear solution. Just like the understanding of "1" is necessary for mathematics, one needs to understand the fundamental unit of the universe for science to find clear solutions. This fundamental unit is called the "I-particle".

The existence and origin of the universe lies in this I, the vibration. Only when we know this I, can we understand the universe.

There are only two entities: the non-vibrating, immeasurable reality and the vibrating, observable reality (Energy). The I-particle is the link between the two, as it is the first expression from non-vibration to vibration. Every vibration needs two forces to act on it, that is, positive and negative. The I-particle has a positive pole and a negative pole, and between them is a neutral area (**Figure 1**).

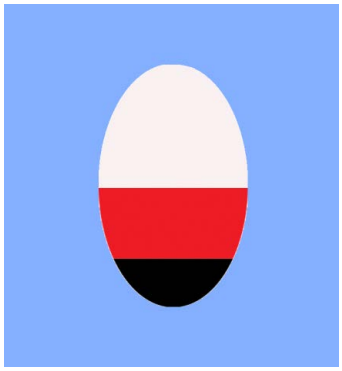


Figure 1. Particle, showing 20% Black matter, 30% Red matter, 50% White matter.

The composition of these in the I-particle is 20% negative (Black matter), 30% neutral (Red matter) and 50% positive (White matter).

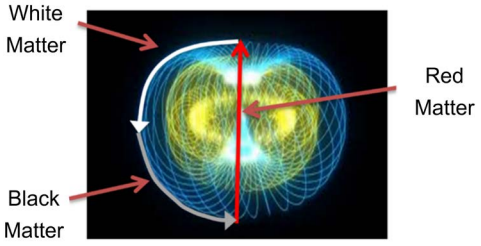
White, Red and Black matters have different frequencies and wavelengths. Frequency is inversely proportional to wavelength. Black matter has the highest frequency and shortest wavelength. White matter has the lowest frequency and longest wavelength. Red matter has mid-level frequency and mid-level wavelength.

In more detail, the pattern of the I-particle is a toroid. The toroid's center is Red matter. It is like a vibrating string. The vibration propagates from the center upwards and over the top. This vibration creates White matter. Then the vibration propagates from the center downwards and outwards along the bottom part. This vibration creates Black matter. After these vibrations, there is a period of no vibration and then the cycle starts again.

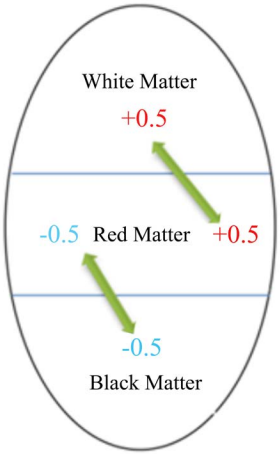
The first movement in the cycle starts from Red matter (which explains our assumption that Red matter is the "creative" energy, having the quality of activity). Red matter transfers to White matter, therefore making White matter positive. When Red matter transfers its negative charge to Black matter, and Black becomes negatively charged. Figure 2(b) shows this movement of electric charges.

The maximum interaction occurs when half charge of Red matter is transferred to White or Black matter. The charge transfer creates two electric poles inducing attractive and repulsive forces (Coulomb's law). Consequently, there are many attractive/repulsive forces. The result of these forces is a vibration.

There are 3 possible combinations as shown in Figure 2(c).



(a)



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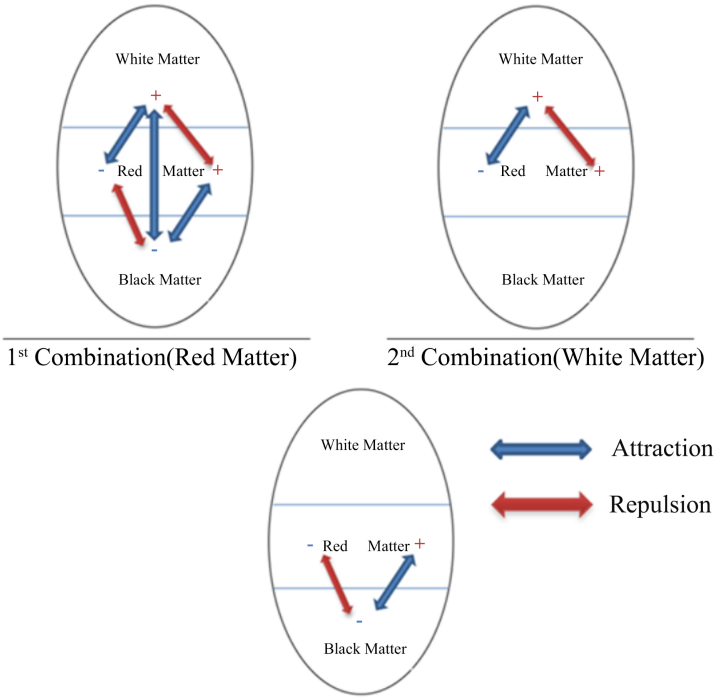

Figure 2. (a) I particle vibration; (b) Electric charge transfer; (c) Electric charge transfer during the I-particle vibration.

The makeup of every I-particle is constant. As Lavoisier told us, the quantity of Energy is constant. As the I-particle is the basic quantum of energy, it means that the I-particle cannot be created nor destroyed. Its arrangement with numerous other I-particles only determines the differences which make up the variety of the matter in the universe.

2.2. The Five Elements

Subtle and Gross Elements

Changes to the ratio of the I-particle in the state of repulsion and attraction form five major categories of matter called "the five elements": Earth (Solid), Water (Liquid), Fire (Heat), Air (Gas) and Space (Ether) (see **Figures 3-7**).

Each has a Gross (atom, molecule and beyond) and a Subtle form (quarks, bosons, fermions and subatomic particles). The ratio of attraction and repulsion in each of the five elements is disclosed in **Table 1**.

A gross element is composed of approximately 50% of the main element and approximately 12.5% of subtle forms of the other 4 elements. In other words, gross elements contain all five qualities, but four of them are always latent while one is manifest, or expressed. For example, silicon is solid. Earth element is manifested, while Water, Fire, Air and Space are latent. Though latent, the Fire is there, which is why the substance can be heated. When it's heated, the repulsive energy increases and it becomes liquid. This quality was previously hidden and

Table 1. Composition of matter by percentage of attracting and repelling I-particles.

	Subtle Space	Gross Space	Subtle Air	Gross Air	Subtle Fire	Gross Fire	Subtle Liquid	Gross Liquid	Subtle Solid	Gross Solid
Attraction (%)	0	0 - 1	1 - 12.5	12.5 - 25	25 - 37.5	37.5 - 50	50 - 62.5	62.5 - 75	75 - 87.5	87.5 - 100
Repulsion (%)	100	100 - 99	99 - 87.5	87.5 - 75	75 - 62.5	62.5 - 50	50 - 37.5	37.5 - 25	25 - 12.5	12.5 - 0

Note: The Air Element is not what is usually understood by the word "air". That air is a combination of the other four elements and is only observable because of this composition. The Subtle Air element is not directly observable. It is the cause of all motion. The Space Element is also not referring to the common usage of "room" or "capacity". It is Ether.

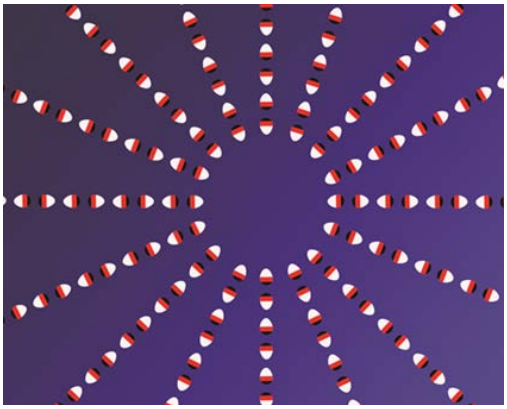

Figure 3. 100% repulsion—Space/Ether.

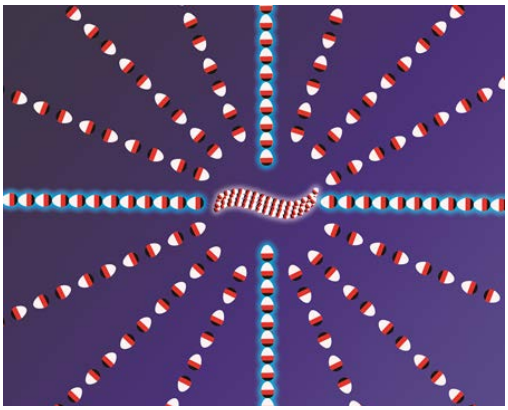

Figure 4. 25% attraction—Air/Gas.

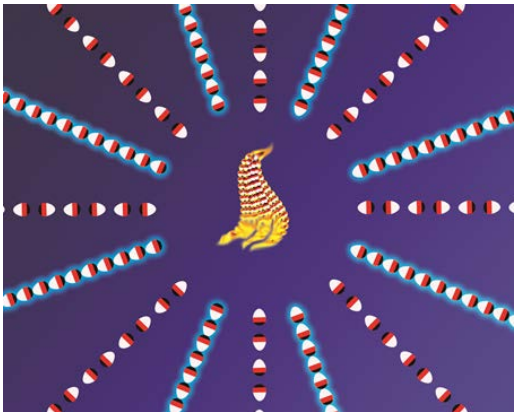

Figure 5. 50% attraction—Fire/Heat/Light.

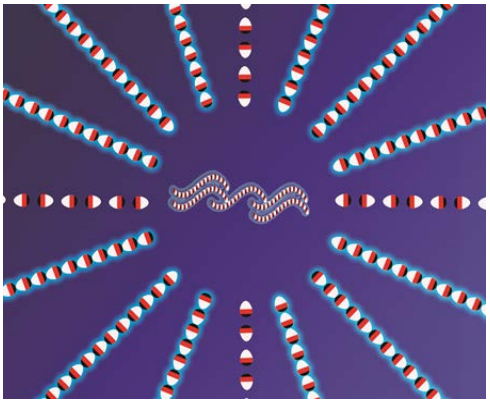

Figure 6. 75% attraction—Water/Liquid.

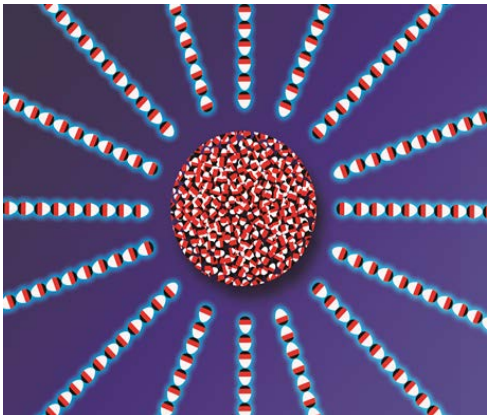

Figure 7. 100% attraction—Earth/Solid.

now liquid is expressed. Continuing to heat it, liquid becomes steam. Then Air element is expressed. Space is manifest in the area between atoms in the molecule and the repulsive energy manifested while heating.

The composition for each gross element is given in Table 2.

The I-Theory predicts the speed limit of each element. It is well known that the speed of light (c) is $\approx 3.10^8$ m.s^{-1}. It has already been noted that light is the subtle form of fire. Therefore, in light, 37.5% of I-particles are in a state of attraction. Light speed is the limit for light, but not for the other elements. In elements with more attraction, the speed limit is lower and for elements with less attraction, the speed limit is higher. Section "**3.3. The I-Theory and Tachyons**" will discuss the possibility of particles traveling faster than light speed.

The speed limit for the gross and subtle elements is given in Table 3.

2.3. S_∞ Particle

I-particles arranged in a state of complete repulsion make up Space, or Ether (Figure 3). When Black matter portions of the I-particles face together (cf. Section "**3.8. Dark Matter**"), gross space is formed. When White matter portions of the I-particles are faced together, subtle space is formed (no attraction) (Figure 8).

Table 2. Composition of matter by percentage of attracting and repelling I-particles.

		Subtle element				
		Space	Air	Fire	Liquid	Solid
Gross Element	Space	0.5	0.125	0.125	0.125	0.125
	Air	0.125	0.5	0.125	0.125	0.125
	Fire	0.125	0.125	0.5	0.125	0.125
	Liquid	0.125	0.125	0.125	0.5	0.125
	Solid	0.125	0.125	0.125	0.125	0.5

Table 3. Elements' speed limit.

	Subtle Space	Gross Space	Subtle Air	Gross Air	Subtle Fire	Gross Fire	Subtle Liquid	Gross Liquid	Subtle Solid	Gross Solid
Attraction (%)	0	0 - 1	1 - 12.5	12.5 - 25	25 - 37.5	37.5 - 50	50 - 62.5	62.5 - 75	75 - 87.5	87.5 - 100
Speed limit	c^{10^4}	c^{10^3}	c^{10^2}	c^{10^1}	c^{10^0}	$c^{10^{-1}}$	$c^{10^{-2}}$	$c^{10^{-3}}$	$c^{10^{-4}}$	$c^{10^{-5}}$

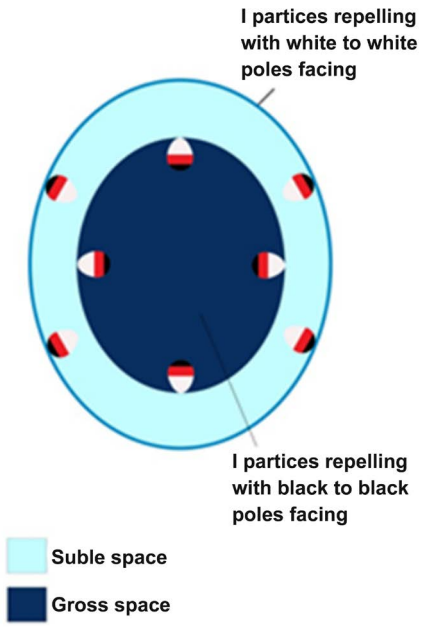

Figure 8. Subtle and gross space.

The repulsive force in Space is formed due to the face-to-face arrangement of this matter. This is why Space is often said to be empty. But Space is full of repelling energy; it could be said it is a field of repelling energy.

Space is inside and outside our body. Space inside our body is called subjective space, and outside is the objective space. Space is also inside and outside the cell, molecule, atom, and subatomic particles. The particles of space are called S_∞ particles.

Volume is directly proportional to the force of repulsion. Since Space has the highest volume, the S_∞ particles move fastest. When the S_∞ particle is divided, millions of I-particles are released.

2.4. A_1 Particle

When 1% up to 12.5% of I-particles are in attraction, a substance called "subtle air" is formed. When between 12.5% and 25% are in attraction, gross air (or gas) is formed (**Figure 4**). Because of this attractive force, the first evidence of mass is Air. It also can be said that life starts from here, because life energy flows through the attractive field. The particle of subtle space is the A_1 particle. A_1 particle's speed limit is equal to c^{10^2}.

In 2013, CERN announced the discovery of the Higgs boson through its experiments involving proton collisions. Yet there are some unsatisfying factors about CERN's experiments that can help us to probe deeper. First, scientists are not yet able to observe the Higgs boson continuously, or even close to a majority of the time. A simple explanation is that the equipment is not sensitive enough to observe what is being sought. Perhaps what is being observed is only a tiny part of the "whole picture" of the Higgs.

The I-Theory proposes that the Higgs boson is actually the Subtle Air particle (A_1 particle). When all energy is in a state of repulsion, there is no mass. Only when there is some degree of attractive energy, mass is formed. Mass is directly proportional to the percentage of attraction. In other words, it also could be said that more attraction means more Higgs boson interaction, and therefore more mass.

The CERN experiments use the speed of light as the limiting speed. This is an obvious choice stemming from the common belief that there is no speed faster than the speed of light, a belief based on the supremacy of Einstein's Special Theory of Relativity. Actually Einstein's theory about relationships between light, velocity and mass describes relative truths, rather than absolute truths, but today they are treated as an absolute reality. That is why one cannot easily conceive a speed greater than light speed.

But if we were to entertain the possibility that there are particles that move faster than the speed of light, it would explain why the Higgs boson was observed so rarely at CERN: the equipment is only constructed to be able to perceive objects below light speed.

Life starts from attraction because life energy flows through the attractive field. In March 2017, at the LHC, CERN found 5 new particles [1]. The excited Ω_c^0 states were observed after a proton-proton collision, as follows: the $\Omega_c^0(3000)$, $\Omega_c^0(3050)$, $\Omega_c^0(3066)$, $\Omega_c^0(3090)$ and $\Omega_c^0(3119)$ are the qualities of energy life. These 5 levels of energy correspond to the 5 levels of I-particle attraction also known as 5 elements.

3. I-Theory Applied to Current Concepts in Physics

3.1. The Space-Time Model

The I-particle is the building block of all matter. Once matter vibrates, time and space also come into existence. The duration of one fundamental vibration is time. During the fundamental vibration, the volume of the contraction and ex-

pansion of the I-particle defines space. The quantum of time, the quantum of space, the quantum of energy and the quantum of matter is the I-particle.

3.2. The Origin of the Four Fundamental Forces

Modern science agrees that particles interact through four "fundamental forces" or "fundamental interactions" (gravitation force, weak force, strong force and electromagnetic). These are described by quantum mechanics and Einstein's Relativity.

Using the I-Theory, it is a simple matter to identify the origin of the four forces. According to the I-Theory, there are only two primary forces: attraction and repulsion. They are the primary cause of the I-particle's vibration. As stated earlier, the I-particle and therefore any kind of arrangement of them is made of Red, White and Black matter.

- Gravity is given by Red matter. Gravitation is the only interaction force without a repulsion component (*i.e.* only attraction is provided). The I-particle is a combination of electrical charges. The only way to have attraction without repulsion is when positive and negative charges are in equal quantities. In other words, neutral charge. This is the characteristic of Red matter.
- Weak force is given by White matter. When the arrangement of the I-particles is dominated by a repulsion force, due to the electrical polarization between I-particles, energy is in a state of White matter domination. The repulsion force tends to oppose the gravitation force. Therefore the attraction due to the gravitation is less. The resulting force is weak; hence the name "weak force". The weak force is led by the Subtle Air particle. As all particles starts from the A_1 particle, the weak force interacts with all particles. A_1 particle is very small; this is why the interaction distance is small.
- Strong force is given by Black matter. When the arrangement of the I-particles is dominated by an attraction force, due to the electrical polarization between I-particles, energy is in a state of Black matter domination. The attraction force tends to be added to the gravitation force. Therefore the attraction due to the gravitation is greater. The resulting force is strong. Therefore it is called "strong force". Strong force explains the nucleus stability. Gravitation force is not sufficient to explain the attraction between quarks. For that, a strong attraction force is needed. The strong force is led by Gross particles. This is why the strong force affects only quarks and beyond. Quarks and hadrons are large particles; this is why the interaction distance is great.
- Electromagnetic force is given by the arrangement between I-particles. As I-particles are electrically polarized, an electric field exists between I-particles. The movement or the vibration of each I-particle creates a magnetic field. Therefore an electromagnetic field exists between I-particles.

As Red, White and Black matters are force carriers, they are primary bosons. These bosons are called:

- Iton—for Red Matter;

- Ison—for White Matter;
- Iuon—for Black Matter.

3.3. The I-Theory and Tachyons

Einstein's theory of Special Relativity describes the relationship between the energy, momentum, and mass of a particle as:

$$E^2 = (pc)^2 + (mc^2)^2 \quad (1)$$

It was realized early on that if you plug in a negative value for m^2 into this equation, you get a combination of momentum and energy that implies the particle must always travel faster than light. That is,

$$V = pc^2/E > c \quad (2)$$

These hypothetical particles are called "tachyons" because physical particles must have a real (not an imaginary) physical mass, there are no particles in the real world which can travel faster than light.

While the equations are consistent, it was never clear whether such a particle, which would have to have imaginary mass, could make sense or exist in the real world. The most well-known tachyon field is the Higgs field. Modern science considers that condensate Higgs field gives birth to Higgs Boson [2] [3] [4].

However, if scientific thought would embrace the radical possibility that the speed of light is only constant relative to things that are slower than it, and that light is not an absolute reality, then this would lead to greater understanding about certain elements of the universe which are still deeply mysterious to physicists, cosmologists, physicians, as well as laymen.

Treating the A_1 particle's speed instead of the photon's as the referential speed, there would be no more particles with negative mass, and the problem is solved, because mass starts with the first attractive particles (A_1 particle or Higgs Boson). The contradiction is removed.

If we are considering the Higgs boson as a field condensation, it means that Higgs (A_1 particle for the I-Theory) is traveling faster than light and when the particle slows down below the speed of light, the particle could be observed. This has been discussed in section "**2.4. A1 particle**".

Some people like to say that a tachyonic field represents an "instability of the vacuum". But, we can also consider the tachyonic field as the ground state. From this we can conclude that the vacuum is full of energy. The I-Theory predicts this field well by explaining that space is full of repelling energy, the S_∞ particle (refer to section "**2.3. S_∞ particle**"). Rather than the photon, the S_∞ particle and the I-particle are the only massless particles.

It deserves to be noted how particle mass is calculated. At CERN, LHC's sensors are measuring only energy. As Einstein shows in the equation

$$E = mc^2 \quad (3)$$

The mass is calculated by the equation:

$$m = E/c^2 \quad (4)$$

So, the mass is estimated using the speed of light as a reference. But considering A_1 speed as the referential speed, the Higgs boson mass becomes minimized compared to other particles. It is in accordance with our prediction because Air particles are less attractive particles and consequently less mass.

3.4. The I-Theory and Preons

As stated in section "**1. Introduction**" elementary particles are not truly elementary but made of sub-elementary particles called the I-particle.

The Preon theory is also based on this assumption. Preons are supposed to be subcomponents of quarks and leptons [5]. The word "Preon" was coined by Jogesh Pati, Abdus Salam and J Stradtheein 1975 [6].

From the I-theory point of view, Preon is an attraction particle. It means that this particle is made with I-particles in attraction state. So, the basic unit of the particle is not a Preon, but the I-particle.

The I theory explains that the elementary brick of the universe is the I-particle. When 100% of the I particles are in repelling state it is called S_∞ particle. These particles are on the repelling plane. It is the first stage. When attraction starts, the first particle in attraction is called A_1 particle or Higgs boson (refer to section **2.4. A1 particle**). It is the first particle on the attraction plane. From 1% attraction up to 12.5% of attraction these particles are called Subtle Air particles. There are numerous kinds of particle depending upon the attraction level. Preons are such particles.

Abus Salam himself agreed that the Preon is not the basic particle [7] and stated that there should be a pre-preonic level.

Since Preons and pre-Preons run in very high energy physics, it is very difficult to observe them directly even with LHC. Such an experiment should recreate the Big-Bang conditions. The main difficulty that the Preon theory faces is about experimental confirmation. In order to detect Preons Stars, Fredrik Sandin and Johan Hansson prosed two methods for observing them [8].

Instead of trying to use a method based on breaking particles, I-theory can provide evidence of Preons in a different way. As I-particles can either be in an attractive state (A_1 particle and above) or in a repulsion state (S_∞ particle), with a small quantity of energy at the S_∞ particle resonant frequency, it is possible to switch I-particles in repulsion state into an attraction state. Therefore, Preons will be created.

3.5. Wave-Corpuscle Duality

The I-Theory explains that matter is vibrating. Therefore we cannot separate matter and vibration. Consequently, the I-Theory can explain wave-corpuscle duality. The reason that particles can be seen sometimes as particles and sometimes as waves is that their fundamental nature is vibration. Arrangement of I-particles creates other particles (S_∞, A_1, elementary particles and so on). When attraction is decreasing, space is increasing. The particle tends to be a force par-

ticle (boson). At that time, repelling energy dominates (*i.e.* White matter domination) and the particle is observed as a wave. When attraction is increasing, space decreases. The particle tends to be a mass particle (fermion). At that time attractive energy dominates (*i.e.* Black matter domination) so it is observed as a particle.

3.6. Gravitational Waves

According to predictions from Einstein's 1916 General Theory of Relativity, extremely powerful processes in the Universe cause "ripples" in the curvature of space-time (any mathematical model that combines space and time). Gravitational waves are generated in certain gravitational interactions and propagate at the speed of light, as waves outward from their source. Energy is transported as gravitational radiation, a form of radiant energy.

Like the movement of waves away from a stone thrown into a pond, Einstein argued that massive accelerating objects like Black holes orbiting one another would disrupt space-time in such a way as to cause ripples or waves outwards. These gravitational waves are supposed to travel at the speed of light throughout the Universe.

According to scientists at Laser Interferometer Gravitational Wave Observatory (LIGO), who announced the first discovery of gravitational waves in 2016, and were awarded the 2017 Nobel Prize for the same, "strongest gravitational waves are produced by catastrophic events such as colliding Black holes, the collapse of stellar cores (supernovae), coalescing neutron stars or White dwarf stars, the slightly wobbly rotation of neutron stars that are not perfect spheres, and the remnants of gravitational radiation created by the birth of the Universe itself". The signal swept upwards in frequency from 35 to 250 Hz and was able to sense distortions in space-time by two colliding Black holes nearly 1.3 billion light years away [9].

The I-Theory explains gravity as the beginning of attraction (changing of the S_∞ particle into A_1 particle). Air particles have a low percentage of I-particles in attraction state, indicating lower frequency (White matter particle). So, according to the I-Theory, gravitational waves are the vibration of air particles. The frequency range of the gravitational waves detected by LIGO is in accordance with the I-Theory. It should be remembered that the Subtle Air particle vibration couldn't be observed by LIGO experiments. Only gross air vibration has been observed. A_1 particle is travelling faster than speed light and a sensor based on speed light technology couldn't measure more than speed light.

3.7. Matter—Anti-Matter

Antimatter is a material composed of an anti-particle and its corresponding particle of ordinary matter. It was first predicted in 1928 by English physicist Paul Dirac, whose theory of relativistic quantum mechanics allowed for a particle with a negative energy solution [10].

A particle and its anti-particle have the same mass, but reversed electric charges. A proton has a positive charge while an antiproton has a negative charge; the electron with a negative charge has the partner of the positively charged anti-electron, or positron.

One of the big mysteries of modern physics is the asymmetry of matter and antimatter. According to the Big Bang theory, antimatter and matter was supposed to be created in equal amounts. But in today's universe, antimatter is very rare.

Antiparticles have been successfully created by scientists, like at CERN, but it in extremely small amounts. The short lifespan of antiatoms creates difficulties in extending the studies. The life span of antihydrogen is approximately 40 billionths of 1 seconds. Recently CERN has succeeded antihydrogen lifespan up to 1000s by cooling them [11].

It is believed that when any particle and its anti-particle counterpart collide, it leads to their mutual annihilation. This releases intense photons (gamma rays), neutrinos, and other particle—antiparticle pairs.

The I-theory accounts for matter/anti-matter in a different way. It contends that normal matter is Black matter dominated (**Figure 9(1)**) and antimatter is White matter dominated (**Figure 9(2)**). White matter and Black matter have opposite charge. Thus, for the same quantum state, matter could have same properties but opposite charge while the domination is White or Black. As White matter is low frequency, it means that temperature is also low. This is in accordance with experiments where it is necessary to cool antimatter for maintaining it—unless White matter (antimatter) turns into Black matter (normal matter).

We can also easily understand that when matter and antimatter interact together, only Red matter dominates (**Figure 9(3)**). This is why we may believe that matter is annihilated, while in fact I-particles are always present.

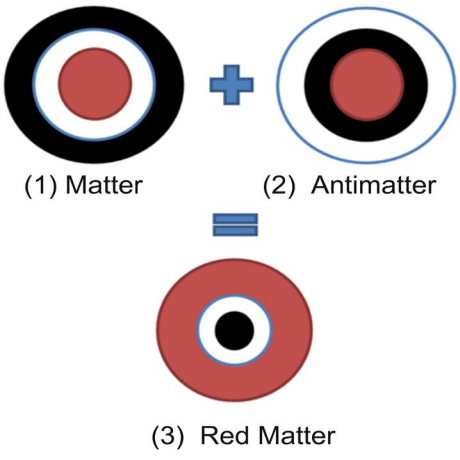

Figure 9. Matter and antimatter interaction.

3.8. Dark Matter

Dark matter is believed to make up approximately 27% of the Universe, but it

has never been directly observed, and therefore many theories are in circulation about what it could be. At the very least, it is understood that dark matter is not warm.

Dark matter's existence would explain a number of astronomical observations that are otherwise puzzling to scientists. Its properties are inferred from its influence on the universe's structure, on galaxies, gravitational lensing, motions of visible matter [12] and the cosmic microwave background.

Even though dark matter is not well understood, scientists agree about two points:

- It doesn't interact with light and is therefore "dark". If it did interact with light, we would see its effects through the absorption or scattering of light from stars and distant galaxies.
- It has a mass. The models require that it interacts gravitationally with regular matter.

Dark matter can be explained by the I-Theory as Gross Space or Gross S_∞ particles. Gross S_∞ particles don't interact with light because they are beyond light. They travel faster than light. As they are repelling particles, they are supposed to be massless. Mass appears with attraction, and therefore A_1 particles are the first attractive particles. They are the first particles having a mass and, as it happens, are not hot (Temperature rises with A_1 particles which have friction—which means more attraction—and this is why space is cold, 2.7˚K). It is important to note that continuity exists between Gross S_∞ particles and A_1 particles. We know that S_∞ particles are 0% attraction and A_1 particles are from 1% up to 12.5% attraction. This means that S_∞ particles are linked to A_1 particles. Therefore, S_∞ particles are attached to mass particles. This is why Dark matter seems to have a mass, but actually, it is massless (**Figure 10**).

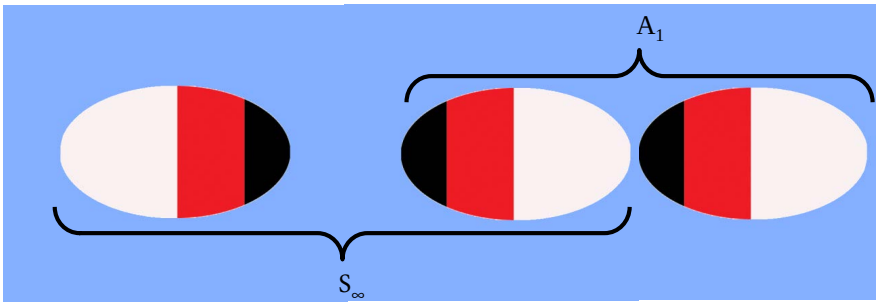

Figure 10. Dark Matter as Gross Space particle.

3.9. Dark Energy

Dark energy is believed to make up approximately 68% of the Universe and appears to be associated with the vacuum in space. Dark matter is required to be homogenously distributed throughout the Universe, not only in space but also in time. This means its effect is not diluted as the Universe expands.

According to CERN's publicity materials, "the even distribution means that dark energy does not have any local gravitational effects, but rather a global ef-

fect on the Universe as a whole. This leads to a repulsive force, which tends to accelerate the expansion of the Universe. The rate of expansion and its acceleration can be measured by observations based on the Hubble law. These measurements, together with other scientific data, have confirmed the existence of dark energy and provide an estimate of just how much of this mysterious substance exists" [13].

Dark energy could be easily explained by the I-Theory as the repelling field of energy of Gross S_{∞} particle (Dark matter) (**Figure 11**). These particles are repelling particles. They are responsible of the expansion.

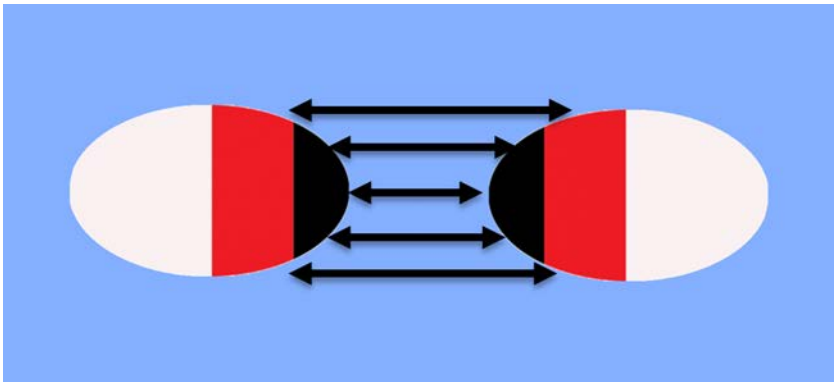

Figure 11. Dark Energy as Dark Matter energy field.

The junction between the S_{∞} and the A_1 particle is very important, as it is the interaction between repulsion and attraction. As the attraction reduces to 0%, a critical point is achieved where access is gained to both types of energy. As information is energy, at this critical point, all information is accessible.

3.10. Space Energy Vacuum and Virtual Particles

Returning to the point of Space being full of repelling energy, many experiments at CERN show that "virtual particles" arise out of the perturbation of the quantum energy field. Using the Feynman diagram, quantum mechanics describes interactions between ordinary particles in terms of exchanges of virtual particles.

The I-Theory explains that Space is not empty but made up S_{∞} particles, and S_{∞} particles are made up of repelling I-particles. The repelling particles create the energy field (Dark energy). Fluctuations in the space energy field means that some repelling I-particles switch into a state of attraction (S_{∞} turns into A_1). As previously discussed, matter starts from attraction. With this, we can explain the creation of virtual particles.

3.11. Spin

Some aspects of spin, an intrinsic form of angular momentum carried by elementary particles, is still a mystery for scientists. Nobody knows the origin of spin, why a spin can be positive or negative, or why its quantum number can be a whole integer or a half integer value.

The I-Theory can easily address these doubts, as follows:

- As described in section "**2.1. The I-particle model**" and Figure 2(c), the movement of electric charges inside the I-particle creates a magnetic field. This field is the origin of spin.
- White matter is positive spin, while Black matter is negative spin. As noted earlier, fermions are attractive particles. They could be White matter or Black matter dominated. As the A_1 is "attached to" the S_∞, the spin is not entire. Therefore the spin could be +1/2 either −1/2.
- Bosons are repelling particles. They are both Gross and Subtle space. They have Black and White matter qualities. This is why their spin is a whole integer value.

3.12. Quantum Entanglement and Hidden Non-Local Variables

Quantum entanglement is a subject described as possible by mechanics, but physically difficult to explain. The amazing behavior of entangled states was first pointed out by Einstein, Podolsky and Rosen in a 1935 article which attempted to show that quantum mechanics was incomplete. In this article, the authors describe a thought experiment that is known as the EPR paradox. In this experiment, two particles have a relationship. Quantum mechanics stipulates that two particles having interacted, or having a common origin, cannot be considered as two independent systems. This means that if the quantum state of a particle changes, that of the second particle changes as well. This change occurs instantly regardless of distance.

This phenomenon was confirmed experimentally for the first time by Alain Aspect [14]. Aspect shows that Bell's inequalities are systematically violated. The conclusion is that there must be hidden non-local variables.

Quantum entanglement and hidden non-local variables are easily explained with I-Theory. In fact, the entangled particles have the same S_∞ particle (**Figure 12**) in common. The law of energy conservation requires that a change in the quantum state of a particle changes the quantum state of the S_∞ particle. The

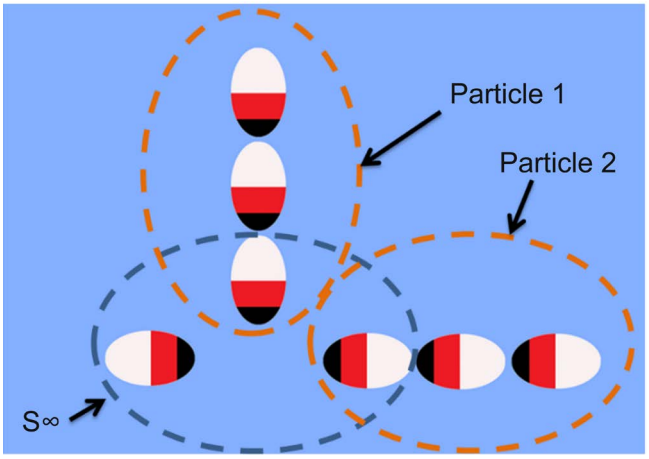

Figure 12. Quantum entanglement.

quantum state change of the S_∞ particle will in turn change the quantum state of the second particle.

Thus the I-Theory defines the hidden variables as the quantum parameters of the S_∞ particle. The speed of this particle being c^{10^3} this change is done at a speed higher than the speed of light. Since Relativity theory does not consider the possibility of going faster than the speed of light, physicists are thinking that these particles are non-local.

The introduction of the particle S_∞ makes it possible to explain quantum particles in a deterministic way. It reconciles quantum mechanics and Relativity theory.

4. The I-Theory and Other Major Theories

4.1. The I-Theory and the Standard Model

The Standard Model (SM) is currently the main theory used in the description or prediction of particles (elementary and subatomic). The Standard Model describes three of the four known fundamental forces in the universe (the weak, strong and electromagnetic interaction forces). The SM also describes the known elementary particles. The SM theory was used for the prediction of such particles as quarks, W and Z bosons and the Higgs boson.

However, most scientists agree that the SM is an incomplete theory, for the following reasons:

- It is well known that the SM does not explain gravity. Even if there have been attempts to add a new particle called the "graviton", the SM does not recreate what is observed experimentally.
- The SM predicts that matter and antimatter should have been created in equal amounts. Yet no mechanism is sufficient to explain the asymmetry that exists in the Nature.
- The SM doesn't explain the expansion acceleration of the universe which is attributed to Dark Energy. According to cosmological observations, Dark Energy represents 68% of the universe, a constant energy density for the vacuum. Attempts to explain Dark Energy in terms of vacuum energy, the SM led to a mismatch of 120 orders of magnitude. Dark Energy completely eludes the SM.
- The SM predicts the neutrino as massless, but experimental observations have since shown that the neutrino has a very small mass.
- The SM doesn't predict Dark matter, which has been calculated to comprise 27% of the universe.

According to the SM, there are 37 fundamental particles such as leptons, quarks and bosons, of which all matter in the universe is made. These particles are said to be indivisible and therefore fundamental. The SM attributes mass to the Higgs field. It says when massless particles interacting with the Higgs field, they are given mass. The field is made of many Higgs bosons.

As mentioned earlier, in the I-Theory the Higgs boson is called the A_1 particle.

Quantum mechanics agrees that the entire universe is made up of "packets of energy". But it stops short of understanding which packet is the basic one. SM's basic packets are elementary particles. The I-Theory presents an alternative view. It says that so-called "elementary particles" are made of millions of smaller basic packets. The basic packet is called the I-particle, the I vibration. As such, the I-Theory is fundamentally a quantum theory. The I-Theory is also an extension of the SM. I-Theory predicts various other particles like S_{∞} and A_1, but these particles travel faster than light speed. These points are the major differences between I-Theory and SM.

4.2. The I-Theory and Super Symmetry

As discussed earlier, SM does not account for the gravitational force and thus it is recognized as incomplete. In the Supersymmetry (SUSY) approach, physicists link the four forces stated above by including the gravitational force, which could be done by relating boson (carriers of the forces), which have a full unit spin and fermion particles (matter particles), which have half of a unit spin. With this theory, bosons are accompanied by fermions and vice versa. While each particle is connected to another particle, the "mass problem" of the Higgs boson (very small mass compared to their size, while interactions with elementary particles in the SM will assign a high mass to the Higgs boson) is circumvented. These "new" particles are called supersymmetric particles and they are expected to be found during collisions at the LHC (CERN) (Table 4).

The I-Theory can explain a Fermion/Boson coupling. As shown in Figure 13, Gross Space can enclose the I-particle in the state of attraction. In this space, Bosons and Fermions are symmetric. Bosons are in the repelling plane while Fermions are in the attractive plane. In the repulsive plane, I-particles are in a state of repulsion and a field of energy exists. Force is the potential energy derivative. This is why all the bosons are located in the repelling energy field.

If supersymmetric particles could be included in the SM, the interactions of three fundamental forces—electromagnetism and the strong and weak nuclear

Table 4. Fermions-Bosons correlation (SM in green, SUSY in yellow).

Fermions	*Leptons* electron muon tau electron neutrino muon neutrino tau neutrino	*Quarks* up down charm strange bottom top	*Gluino*	*Photino*	*Wino*	*Zino*	*Higgsino*
Bosons	*Sleptons* selectron smuon stau electron sneutrino muonsneutrino tau sneutrino	*Squarks* sup sdown scharm sstrange sbottom stop	*Gluon*	*Photon*	*W±*	*Z0*	*Higgs*

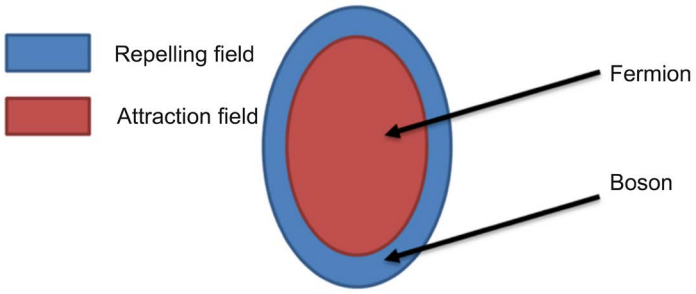

Figure 13. Boson-Fermion coupling.

forces—could converge at very high energies [15]. It is important to note that the gravitation is not considered in this study (**Figure 14**).

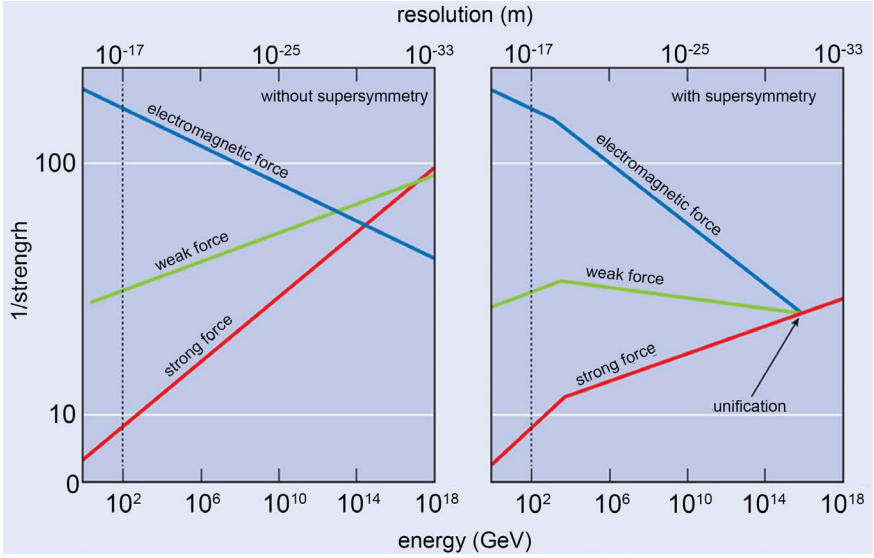

Figure 14. Coupling constant versus energy level [15].

The I-Theory is also relevant for SUSY. High Energy leads to the I-particle. And the convergence point should be the I-particle. The I-particle is the unifying point for all forces and all theories.

4.3. The I-Theory and Relativity

The Special Relativity Theory is based on the speed of light as a limit for all particles. This assumption leads to different conclusions:

- The photon has no mass;
- Space is empty;
- Gravity is based on gravitational waves.

However, recent experiments show that the photon has a very small mass. Sidharth measurements give a value around 10^{-57} gm [16], while Jun-Jie Wei & al give 10^{-45} gm [17]. Both values are below the theoretical value given by Heisenberg's Uncertainty Principle (10^{-66} gm). Moreover Acquaro shows that the photon has not only a mass, but also a radius (and a density) and it obeys Ste-

fan-Boltzmann's law [18], indicating that its mass is directly proportional to its frequency. Consequently, a photon possesses not only a mass but also a wavelength that corresponds to the length of its radius. If a photon has a mass and radius, it also possesses a density which gives it a spatial dimension. Acquaro observed that each photon which is formed by energy and matter, also has an energy density. This density corresponds to what Stefan and Boltzmann have attributed to Black bodies.

In Newtonian mechanics, space is the inertial referent and the condition of motion. It is a movement in space but also relative to space. If space is the place of movement, it also becomes the reference from which it is measured. It plays the role of privileged referent, a system of absolute inertia.

According to General Relativity, a wave is a local distortion of space, which is propagated step by step. This could happen only because a vacuum is not "nothingness". It is an environment that can absorb and restore vibrations. Before Einstein, this was called "Ether", a term introduced to Western civilization by Plato. But if there really were nothing, the vibration would touch nothing and no propagation would take place.

Nowadays, Ether no longer has any utility as a privileged reference system, because Einstein denied it any mechanical property in order to be able to install his geometry of the fields more reliably based on the Lorentz conception. The fields became independent realities linked to no substratum. Einstein was satisfied to stick the movement of the bodies without worrying about the agitation of any medium. It was enough to confine oneself to the lines of force which these bodies follow, which can be compared to kinds of cosmic threads, to take up the image of Minkovsky. Having their autonomy, it became useless to postulate a homogeneous and isotropic Ether which can represent the states of these fields. Hence, if there are no small floating bodies and only the position of the space occupied by the matter observed, there is no reason to admit that matter is composed of mobile particles. The question of the nature and characteristics of this environment is therefore no longer valid. One can equally well imagine this media—space—as consisting of lines of force. It is the gravitational potentials which give to space the metric properties of the spatio-temporal continuum, which are different in the surroundings of each point because they are conditioned by the matter present (*i.e.* space-time curvature is related to mass; the greater the mass, the more significant the curvature). Fields become ultimate realities [19].

But now we know that space is full of energy (Dark Energy). Richard Feynman proposed that the vacuum which is contained in a single bulb would be enough to boil all the oceans of the planet. Thus, space has some characteristics which are not described by Einstein's relativity. Einstein himself admitted the existence of Ether: "We may summarize as follows: according to the theory of general relativity, space is provided with physical properties, and in this sense, therefore, there exists Ether. According to the theory of general relativity, a space

without Ether is unthinkable, for in such space not only would there be no propagation of light but also no possibility of existence for a space and a standard time (measured by rules and clocks), nor consequently for space-time intervals in the physical sense of the term" [20].

Therefore it may be concluded that General Relativity is incomplete because of its omission of a description of the characteristics of space.

Contemporary scientists like George Smoot still believe in the need to use Ether in the description of space. In his Nobel lecture, Smoot described his own experiments on the Cosmic microwave background radiation anisotropy as "New Aether drift experiments". Smoot explained that "one problem to overcome was the strong prejudice of good scientists who learned the lesson of the Michelson and Morley experiment and Special Relativity that there were no preferred frames of reference ... there was an education job to convince them that this did not violate Special Relativity but did find a frame in which the expansion of the universe looked particularly simple" [21].

Taking up the case of gravity, General Relativity faces the same problem. The theory describes only the geometry and not the medium. General Relativity successfully predicted gravitational waves. Such waves were detected for the first time on September 14, 2015 by the LIGO experiment [22]. But, how can the gravitational field exist? Einstein defines it as a potential, but a potential for what? What is the difference between the gravitational load and the electromagnetic load? If each mass produces gravitational and electromagnetic waves simultaneously, how can a gravitational wave be distinguished from an electromagnetic one?

The I-Theory's answer to Relativity has been discussed earlier. Relativity is only considering Fire, Water and Earth elements. The I-Theory includes Relativity and adds to it the supraluminal particles (Air and Space). Where Relativity describes only the geometry and not the media (Space), I-Theory is able to provide answers about Space (Ether).

It has also previously been mentioned that experiments measure a photon mass while Relativity predicts a massless particle. The I-Theory explains that mass appears with I-particle attraction. In fact, mass appears when the S_∞ particle switches into the A_1 particle (Air particle).

The photon is the Subtle Fire particle. Such a particle has more I-particles in a state of attraction than the A_1 particle. Thus, the photon has a mass.

The I-Theory gives also a different outlook about length-time contraction/dilatation. Higher speeds are reached when the attraction is less (*i.e.* when S_∞ and A_1 proportion increases). **Figure 15** shows that when Space and Air increase, there is less capacity to accommodate other elements. This is why it seems to have length contraction when speed is increasing.

Therefore when speed increases (**Figure 15(b)**), the number of I-particles increases in Space and Air. As the I-particle is a quantum of energy, for high speed, energy is also increasing. So we can write:

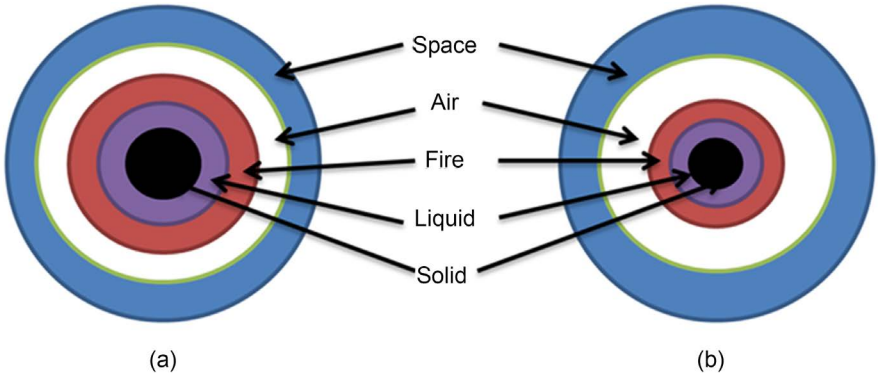

Figure 15. Length contraction.

$$E_b > E_a \tag{5}$$

Or:

$$h\nu_b > h\nu_a \tag{6}$$

$$\nu_b > \nu_a \tag{7}$$

And finally

$$t_b < t_a \tag{8}$$

We can also explain very simply the time contraction by using the section "**3.1. The Space-time Model**". We already said that when the speed is increasing, the percentage of the repulsion or White matter is increasing (White matter domination). It means the frequency is decreasing and the wavelength is increasing. Therefore, for White matter domination, less periods are required for travelling the same distance. As we already said, regarding the I-theory, the basic unit time is the duration of a pulsation. So for White matter domination, time is reduced for travelling the same distance. By using the I-Theory, it is easily to demonstrate that when speed is increasing, time and space are contracting.

In Section "**3.1. The Space-time Model**", the I-Theory predicts that we cannot separate, time, space, energy and matter. On this point I-Theory is fully in agreement with General Relativity ($E = mc^2$).

4.4. The I-Theory and Big Bang

The Big Bang is the most commonly accepted cosmological theory. However, major scientists doubt the truth of the Big Bang theory.

The first major point is related to Cosmic Microwave Background (CMB). In 1964 Penzia and Wilson at Bell found a persistent radiation from every direction which had a thermodynamic temperature of about 2.7 K [23]. The CMB was supposed to be homogenous in each direction. But Nobel Laureate George Smoot shows that CMB is anisotropic [21]. Some scientists like Dr. Bonnet-Bideau doubt a theory describing a homogenous and isotropic universe [24].

The second point is related to the matter-anti matter asymmetry. The Big Bang assumes that when the universe was young and very hot it was in statistical

equilibrium. It means that matter and antimatter were in equal quantity. But all observations show that the universe (including its most distant parts [*i.e.* at the early stage]), is almost entirely composed of matter. Even if A. Sakharov tried to explain the asymmetry by specifics conditions [25], the process is still not confirmed and not fully understood.

The third point is that mature galaxies exist where the Big Bang predicts only infant galaxies would be. A galaxy has been observed at a distance of GN-z11. It means that this galaxy who is surprisingly bright and massive, has been observed only 400 million years after the Big Bang. But the conventional theory predicts that a galaxy couldn't be formed earlier than 1 billion years after the Big Bang. Therefore, the obvious question comes: "How could such an extreme object form so early in the Universe"? Mutch and al claim that a reionization due to the light should occur in the very earlier year of the universe [26]. But nothing confirms this hypothesis.

The last point is that the Big Bang requires Dark matter in proportion of 27% of the Universe for explaining nucleosynthesis and also needs Dark Energy in proportion of 68% for explaining the Universe's inflation. But the Big Bang doesn't explain what Dark matter and Dark Energy are.

According to the Big Bang theory, millions of years ago, the entire universe, including all stars and planets, was condensed into a small sphere. This exploded and the stars and planets were formed. Soon all other elements were formed. The Big Bang theory maintains that nothing is created newly. The universe will never return to the original state; the universe is ever expanding. Due to the explosion, we feel the galaxies are ever moving apart.

Nobody knows what was first (sphere mass or energy). If it was mass, was it an elementary particle, a boson, an atom or beyond? If it was an elementary particle, how did all other elements form out of it? Was it light itself?

Mass and matter are different. Yet energy and matter are the same. When matter has 100% attractive force, a solid mass is formed. When it has 75% attractive force, liquid mass is formed. Similarly when it exists with 50% attraction it is fire mass, or light. The truth is that light is only the middle stage, and not an absolute as it is currently believed to be.

So is the existence of the universe based on the fire mass with 50% attractive and 50% repulsive energy? Did it explode and form all the planets and solar system? If so, what is the role of gas and ether in the universe? Were they present before the explosion or after?

The I-Theory offers another interpretation of what the "Big Bang" was. First, it proposes that the universe was not formed as a result of an explosion. The explosion happens when 100% repulsive energy changes to some attractive energy. An interaction between opposite polarities changes from matter to mass (S_∞ to A_1), creates an explosion. But this is not the beginning of matter nor the universe.

Secondly, the I-Theory explains that the movement of matter is caused by subtle air. The A_1 particle causes the motion of all mass and is the particle mak-

ing up gross and subtle air. Motion of the boson and all the elements in living and non-living things is due to the A_1 particle. Before the Big Bang, the I particle, space and air all existed.

The universe is not without laws. To understand the scientific laws of the universe one should understand I theory. Origin, existence and merging are merely energy changes due to changes of orientation in the fundamental element, the I-particle.

Another cosmological theory is the Steady State theory. According to this theory, the universe is infinite and has no beginning or end. The universe as it is now is the same as it was long ago, and will continue to be forever. Though galaxies are moving apart their densities are not changed because new substances are always created and new stars and galaxies born. Matter is thus continuously produced.

If we think with scientific reasoning, any creation has a beginning and end. The origin, existence and merging is based on time. Since it is time-bound, creation should have an end and a beginning.

We argue that the universe has a beginning and an end, because the "universe" is merely a sum total of its parts, and therefore it must be governed by the same laws as any other matter. All matter in the universe is constantly changing. Beginning and end merely mean change in form.

When matter changes from gas form to heat or liquid or solid, the constant factor is the existence of the fundamental particles (I-particle), and the change is in their orientation and degree of attraction and repulsion. The reliability of these changes establishes Steady State theory in the plane of the I-particle. A ceaseless flow of change has existed since the origin of universe. The attractive and repulsive forces are responsible for the endless change.

The Big Bounce theory [27] [28], another cosmological theory, says that the universe is expanding and contracting. Materials with high density contract explode and move apart. As the densities increase beyond a certain limit, they again unite due to gravitational force. No new material is produced, only their form changes. Around 1200 million years ago an explosion occurred and substances moved apart. This will continue for another 2900 million years or so. After that due to gravitational force substances will reunite and will contract. According to Big Bounce theory, the universe is continually shrinking, expanding and exploding, as the density varies.

When there is attractive force, massless matter (S_∞), which is in a state of complete repulsion, changes to mass (A_1). The friction of gravity, which is responsible for the creation of mass, generates heat. This heat makes the mass capable of expanding, contracting and exploding. All these changes are based on mass. When the I particles arrangement becomes a mass, this theory is not contradictory. But mass is not the ultimate truth about the origin of universe.

All of these cosmological theories involving explosion, weight and density are based on light. Today's thought is based on Einstein's relativity theory and we

need to travel much beyond that, to the absolute science of the I-Theory.

S_∞ particles are repelling particles; all other particles are attractive particles. The repelling/attraction forces are the elementary forces of the universe. It makes everything pulsating, from the I-particle, to the elementary particles, atoms, cells, body, planets, galaxy and universe. Such dipole has been found in our local Galaxy Group [29] (**Figure 16**).

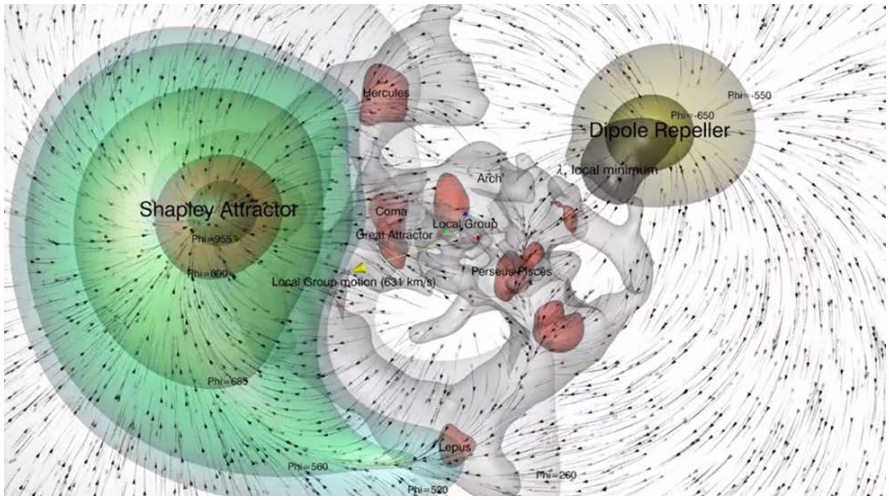

Figure 16. The Dipole repeller in our local Galaxy Group [29].

4.5. The I-Theory and String Theory

String Theory is an active field of research addressing one of the issues of theoretical physics: to provide a description of quantum gravity; that is, the unification of quantum mechanics and General Relativity. The main peculiarity of the String Theory is that its ambition does not stop at this reconciliation, but that it claims to succeed in unifying the four known elementary interaction forces.

According to String Theory, our world, whose space seems three-dimensional, does not consist of 4 dimensions of space-time (3 of space and 1 of time), but of 10, 11, or even 26 dimensions (10 dimensions in the five conventional string theories; 11 D with theory M and supergravity; and 26 D in the case of the bosonic string theory). Without these additional dimensions, the theory collapses. Indeed, the physical coherence (wave function giving non-negative probabilities) imposes the presence of additional dimensions. The reason behind their invisibility is that they would be found by the process of dimensional reduction on a microscopic scale (billions of times smaller than an atom), which would not allow us to detect them.

But many scientists like Lee Smolin criticize this theory [30]. Smolin worked for more than 30 years in this field. Smolin claims that String Theory makes no new testable predictions, that it has no coherent mathematical formulation, and that it has not been mathematically proved finite. He points out that in thirty years thousands of scholars have published a hundred thousand articles devoted to String Theory without leading to anything concrete. He himself produced

eighteen articles on the topic.

Smolin states that to propose a String Theory landscape having up to 10^{500} string vacuum solutions should not be accepted by science. String Theory represents a caricatured explosion of the number of these free parameters, which are often counted by several hundred. What has hitherto been fairly concealed is the fact that in the most advanced approaches to String Theory the proponents of this strange discipline admit that their choice is one of 10^{500} possible other theories, each theory representing a particular choice of parameters and physical laws. Of course, one could say that it is enough to select in this "theoretical landscape" the right law, which will account for the observations based on the indisputable acquis of the physics of the elementary particles. Unfortunately, the proponents of String Theory admit that they have no idea how to proceed.

5. Conclusions and Perspectives

The I-Theory is a very promising theory. It predicts new particles like the I-particle, S_∞ particle and A_1 particle.

This theory unifies all accepted theories. The I-Theory can explain the four fundamental forces at a deeper level, and can provide convincing answers to the main mysteries like Dark Energy, Dark matter, Antimatter, Tachyons, virtual particles, Big Bang singularity, and so on.

A significant point of the I-Theory is the primacy of repulsive and attractive energy, which explains the creation of particles and the beginning of mass.

We show that a singular point between S_∞ and A_1 particles exists. This point is the junction of repelling and attractive energy, repelling and attractive particles and finally the convergence of all information.

The I-Theory introduces a new concept of the "quality" of energy with White, Black and Red matter regarding the frequency level of the energy vibration. The concept of energy quality has many potential and exciting applications in society which deserve in-depth future study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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