

To the adherents of Relativity and quantum theories: If the universe cannot be described through your theories with clear-cut physical pictures that a lay man can understand, the following may set you thinking as to where your concepts went wrong. This departs radically from your 20<sup>th</sup> century concepts that need deep revision. You held the field and had your say for more than a century now and have led science to the games of probability and uncertainty, of mere chance and coincidences, based on outer appearances rather than the underlying reality.

You scare humanity that the sun will consume all its matter one day, throwing away its energy into the voids of space – never to be retrieved again, as if you knew for sure the basic processes that created matter, stars and cosmic energy. What you name as “empty space (void)” may itself be the “dynamic vacuum of spatial energy”. What you think is “dark matter” could be space-vortices that rotate the planets, stars and galaxies, both axially and around in orbits. You are now searching for the Higgs particle to understand the true nature of “mass” possessed by matter, and may also look for “particles” of momentum, force, kinetic energy, velocity and so on. It does not occur to you or you have so far failed to notice the structural relationship between the vacuum and the electron that was discovered more than a century ago – and that might reveal the first origin of mass and charge in the universe.

And the latest: You talk of “vacuum instability”, “quantum fluctuation” and creation of “a tiny bubble of the vacuum” and expansion of this bubble at the speed of light sweeping everything before it and “the sun and the earth will be really gone by that time”. The above, based on a recent announcement from BBC, if really so said by the scientists interviewed, shows they do not deserve their high status. [Breakdown of vacuum under circulation around a point, at a limiting velocity gradient: (speed of light relative to the vacuum)/ (electron radius), is the basic Principle in this writer’s space vortex theory (SVT), formulated around the mid nineteen seventies. This principle that vacuum breaks down during circulation at the limiting speed of light (relative to the vacuum) into a void was stated in my unpublished short paper to Foundations of Physics (1974), only to be plagiarized by some senior Indian scientists and published in the same journal (1977)]. So, the vacuum that was emptiness for Democritus, Newton, Einstein (1905) becomes now all of a sudden a substance to create bubbles? A turn-about after a century of hot debates between ether and non-ether, between vacuum and void, and with no apology whatsoever from you to the science community!

Looking back into the history of science and noting Natural Philosophers’ contributions since the times of Copernicus, while also accepting the guidelines from the learned scientist/engineers’ research works of the 20<sup>th</sup> century, we need to lay the foundation of a New Science Philosophy for world science in which your theories will also have a prominent place – declaring that at the start of the 20<sup>th</sup> century, the path you chose to found your theories to understand the workings of nature was certainly misdirected. It is time for retrospection and to support the new movement to establish a comprehensive new theory of Space and matter.

## SOLILOQUY

February 16 -19, 2013

There are questions as to the finiteness or infiniteness of the universe that need an answer. Nature presents us with matter in the universe, composing the planets, stars, galaxies located in a vast, seemingly endless extension of “something”, that is being called “space”, “vacuum”, a “void”, an “emptiness” or even a “nothingness”. Our knowledge of the Natural Philosophy of the past few centuries, and also of the science and philosophy today, does not help us to pinpoint with certainty which one out of the above five is the real substratum of the universe.

If we start with vacuum and define it to be a volume without matter, and qualify it further by calling it “empty”, the question that have been raised against this is that “space is never empty because electromagnetic field is everywhere in it” will have to be answered. Can there be a fundamental state of vacuum, which has no matter and also no field? Answer to this requires our knowledge as to how and from what entity matter and fields were created. Modern science is dumb on this. Rene Descartes is credited with the postulation of fluid ether as the universal medium and creation of matter as vortices of this medium. The substance was ether and the motion in vortices was inherent. The motion of stars, planets, galaxies, and even in atoms as vibration leads to the conclusion that if the vacuum itself is postulated as the universal substratum, it be inherent with motion. And fluid vacuum inherent with motion could create matter in addition to providing a medium for light transmission and also to transmit action at a distance which would not be possible with a void space.

Such a vacuum can be termed: “Primordial Substratum” of the universe. [This goes against Einstein’s conclusion, early 1950s, that fields are most fundamental and there is nothing more fundamental than the fields]. With the universal substratum now defined as Fluid Substratum (hereafter referred to as “substratum”), the commonly used terms mentioned at the start, being without any rigid definitions, become redundant. The “dynamic substratum”, inherent with motion, has “states” like circulation, linear motion, vortex motion, acceleration. [Prominent Natural Philosophers, in the early 20<sup>th</sup> century, had envisioned a dynamic ether to serve similar functions]. In the final state, the substratum is superimposed with fields and matter which it itself creates continuously at suitable locations. This is the structure of the universal substratum, matter and fields, at the present stage of evolution in the universe.

How deep is the substratum of the universe? As is now known, stars and galaxies have been observed in large numbers and at practically unfathomable distances. If such is the case also for distances still farther away, with no end, then the conclusion is that

the universe of matter (galaxies, stars) exists in an infinite extension of the substratum. However, if it is ever found that beyond some depth in the cosmos there are no more stars and galaxies it will be a finite universe of matter alone, existing in a finite extension of the substratum.

Now a more subtle and basic question has arisen: Is the substratum finite or infinite? Nature teaches us a law that every physical entity has a limit in size. At the limiting boundary of a medium, another medium must start. Like the oceans, which are limited in their expanse and are bounded by the surrounding land. My intuition and deeper considerations tell me that there is a limit to the extension of the substratum too, from where infinite "nothingness" starts. And this has a scientific basis, too, to be spelt out. In other words, the universe is a finite and spherical substratum, existent in an infinite volume of nothingness. Why a spherical volume? Because of symmetry considerations and with no external forces acting from the nothingness beyond, spherical volume is a natural choice. The universal boundary is where the substratum ends and nothingness begins. There could be an infinity of finite universes of this kind -- independent of each other -- in the infinite extension of the nothingness. Man may never know this secret of nature through scientific logic.

February 20-28, 2013

The properties of the fluid substratum (hereafter, referred as "substratum" or "FS" or "fluid space") have to be such that it can be the source of energy that can create energy fields and particles of matter. In fact, this will be the proof of reality (energy content) of the substratum. In order to reach the most fundamental stage for analyzing properties of the substratum from First Principles, it has to be supposed that none of the material properties, of which we have experience, like mass and charge and other qualities of matter are possessed by the substratum. Mass has to be created by a mass-less entity in order to reveal the very origin of the mass and the process of its creation, and so also the charge property has to be generated from a charge-less entity. Such a supposition might sound absurd to some, because it has always been believed in the history of science, that composite matter should have the same properties as its components. This philosophy, continuing for centuries in scientific analysis, can be accepted in the structure of atoms and particles of matter like neutrons and protons that are known to be composite, but not in the structure of the fundamental particle which, if composite, cannot be termed fundamental.

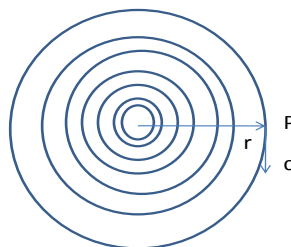
Fluids have much less rigidity compared to solids. Motion added to a fluid makes it circulate around a center. Being atomic in nature, the minimum radius of circulation in a fluid will be the atomic diameter. The atoms of a fluid have their individual independent centers and this makes matter discontinuous and also compressible as the atomic centers can come closer or move farther during vibration/compression. Unlike a material medium, the substratum is continuous and incompressible. During circular or curvilinear motion of a normal fluid, and where there is a velocity gradient, there is a

viscosity effect due to atomic friction. The substratum is non-atomic and continuous, with no viscosity effect. [With these non material properties of space and a flow velocity that can vary from zero to a limiting velocity equal to the velocity of light relative to the substratum; and break down of the flow at limiting velocity during circulation into voids (electrons), I termed space a “super fluid” in my first unpublished paper “The Physical Universe” (1974) submitted to the Journal Foundations of Physics, only to be plagiarized and picked up by a few senior Indian physicists and published with these very postulates clothed in mathematical language in the same journal in 1977].

March 3, 2013

A breakdown of the flow of the substratum, when in a vortex circulation, takes place when the velocity gradient at the vortex center reaches a limiting value, and a stable fundamental particle is created. The vortex in which each point on a streamline is under acceleration is itself cosmic energy and there is no need for another energy to create the particle. (A volume of FS in acceleration is cosmic energy, stated further). The continuity of the substratum is lost at the location of particle creation. The particle is created with its field structure that transmits and fills the whole universe. Numerous particles so created, break down the continuity of the substratum, filling it with particles and their structural fields, thus converting it into a material medium of matter and fields—the space medium we are now in.

In a uniform steady flow of water in a channel at velocity  $v$  and the channel depth  $r$ , velocity gradient is  $v/r$ . Maximum value of  $v/r$  will require the  $v$  as maximum and  $r$  to be the minimum. In an air medium, transmission of sound (pressure/under-pressure shells) determines the speed of sound, which is also the limit for steady flow of the air.



Plain vortex in fluid substratum

Fig -1

$$v = \omega r$$

$$\omega = v / r$$

$\omega$  is angular velocity of rotation of point P

Tangential velocity  $v$  varies inversely as  $r$

Fluid Substratum, FS, is incompressible, continuous, mass less..

Similarly, the fluid substratum has a limiting velocity of flow, which is the same as the velocity of transmission of fields' effects, including light, with respect to it, as the very absolute property of it. In a plane vortex of the non-material substratum (which is incompressible and continuous), velocity falls inversely as  $r$  where  $r$  is the radius from the vortex center, and will have a maximum velocity gradient  $c/r$ , where  $c$  is the velocity of transmission of light relative to the substratum (Fig.1). The angular rotation  $\omega$  is also  $c/r$ , that is, the velocity gradient. The only Postulate in SVT is that the non-material fluid substratum has a limiting velocity gradient  $c/r$  where  $r$  is the minimum radius of circulation (SVT).

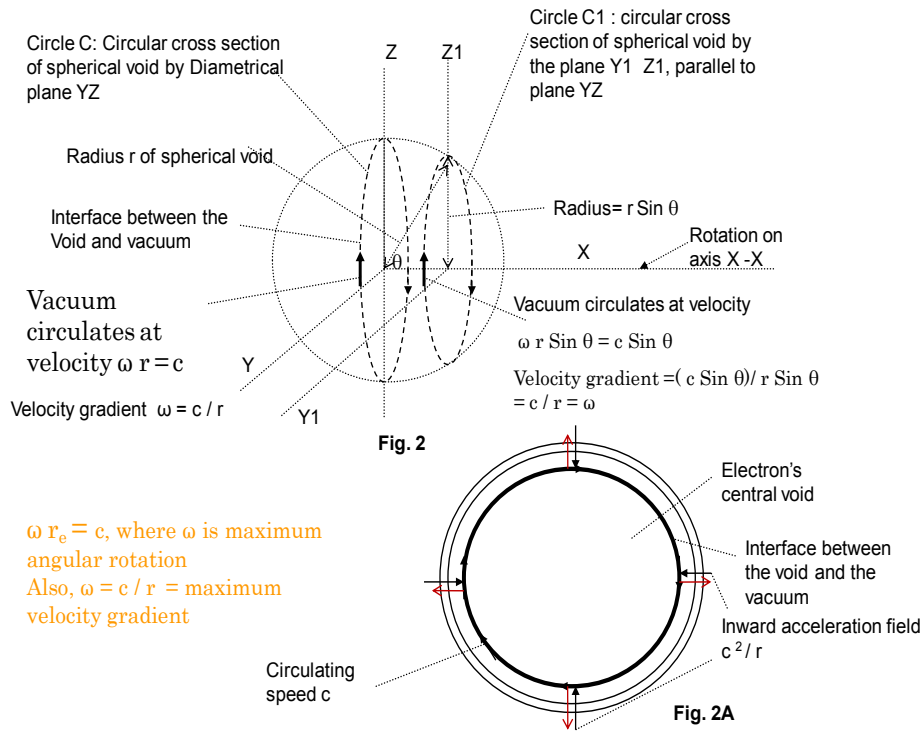


Fig. 2A shows a diametrical section of a spherical vortex with circulation of FS at the limiting speed  $c$  and an outward acceleration field  $c^2 / r$  (shown by red arrows) that created a spherical void within which the FS does not exist. In Fig. 2 the circle C with radius  $r$  is in the diametrical plane Z-Y. Tangential to this circle at the point shown, FS velocity is  $c$  - the maximum. Angular rotation  $\omega$  of a point on this circle, which is also the velocity gradient, is  $c/r_e$  -- the limiting value. In another parallel plane Z1—Y1, at any point of the circle C1, velocity gradient is also the same  $c / r_e$ . Outward acceleration due to FS vortex circulation breaks open a spherical void (Fig. 2A), which is dynamically stable because of the following. Consequent to the creation of the void, the outward acceleration field reverses and acts on the spherical interface (black arrows), tending to reduce the radius  $r$  to close the void. But, any reduction in the void radius, say to  $r - \Delta r$  increases the velocity gradient to  $c / (r - \Delta r)$ , thereby, restoring the radius back to  $r$ . The void that is created has dynamic stability.

This is the structure of the fundamental particle, which shows the properties and behavior of the electron (SVT). The interface spinning around the X-axis at tangential velocity  $c$  encloses a spherical void. The mass of the particle is defined to be the volume integral of the speed of circulation of FS within the spherical interface prior to creation of the void. The electric charge of the particle is the surface integral of the velocity tangential to the interface surface. Two fundamental equations: mass-equation, and charge-equation are derived from the electron vortex and from these the presently accepted constants, gravitational constant, Planck Constant, dielectric constant, permeability constant, etc. are derived using only two universal constants: velocity of light relative to the substratum, and the electron's radius, that is the radius of the spherical interface (SVT).

[Mass of electron,  $m_e = (4\pi / 3) r_e^3 c$ ,  $r_e$  is the radius of the interface and  $c$  is the limiting flow velocity of FS. Dimensions are:  $L^4 / T$ . Charge of electron,  $q_e = (\pi / 4) 4\pi r_e^2 c$ . Dimensions are:  $L^3 / T$ .]

On the use of the dimensions for length and time: To derive electron charge from the charge equation, the ESU unit with cm and second was used and the result compared to the experimental value was very close (SVT). Such a numerical closeness had, in the past, helped to pinpoint that light is an electromagnetic wave. An extract from 'A History of the Theories of Ether and Electricity', By Sir Edmund Whittaker: "Thus the result was obtained that velocity of propagation of disturbances in Maxwell's equation is  $c \epsilon^{1/2}$  where  $\epsilon$  denotes the specific inductive capacity and  $c$  denotes the velocity for which Kohlrausch and Weber had found the value  $3.1 \times 10^{10}$  cm /s. Now by this time the velocity of light was known. Maxwell was impressed as Kirchhoff had been before him by the close agreement between the electric ratio  $c$  and the velocity of light". All quantities derived in SVT use cm and second as the units of length and time because of closeness of the experimentally derived electron charge with the derivation from the charge equation. Relation between "gram" with the new mass unit " $\text{cm}^4 / \text{s}$ " is found to be:  $\text{gram} = 8.4 \times 10^6 \text{ cm}^4 / \text{s}$ .

Nature has only the electron radius as the unit of length which is derived from the Charge Equation as  $4 \times 10^{-11}$  cm, whereas the classical electron radius is about  $10^{-13}$  cm. A clarification came from the book, Philosophical Problems of Elementary Material Particles: George Yankovsky; Progress Publishers, Moscow, 1968: "There are several lengths that might aspire to be characteristic of the dimensions of the electron. If we proceed from modern theoretical electrodynamics, which has been established better than any other field theory, the conclusion seems to be that the electron has enormous dimensions, not  $10^{-13}$  cm, as expected from classical physics, but  $10^{-11}$  cm (a hundred times greater)". This clarification and support on the electron radius confirmed the new fundamental charge equation defined from the electron structure (SVT).

March 7, 2013

Lord Kelvin (W. Thompson) had reached the conclusion that ether is a continuous, incompressible fluid. Experimenting with smoke rings to study the behavior of electron as a vortex structure led him to believe that any motion given to an incompressible fluid will dissipate away. But in SVT, with a single postulate that the non-material fluid substratum breaks down during circulation at the limiting velocity gradient, ( $c / r_e$  electron radius), dissipation of the fluid space is prevented and a stable electron is created.

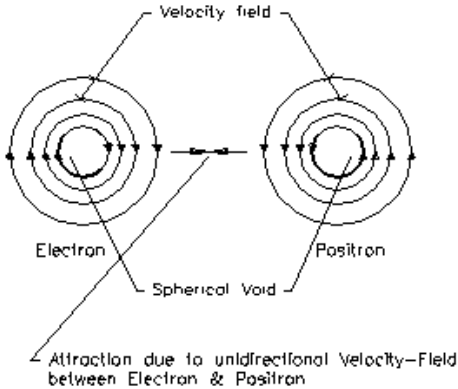
For clearer understanding of the origin of mass and charge in electron structure and their effects, consider a thin shell of a metal, evacuated from inside. It will be subjected to an external atmospheric pressure due to the absence of air within. There will be pressure distribution on the shell. If the shell is moved, the pressure distribution on the shell is also moved. The pressure distribution around the shell becomes, somewhat, a part of the shell structure. Similarly, the absence of FS within the interface at the electron center creates inward forces on the external interface surface from the FS medium surrounding it. Due to the circulation of the FS tangential to the interface and inward acceleration field, electric field and charge effect is produced. Inward pressure on the interface produces gravitational effect. Inward acceleration field on the interface produces electric potential. When the electron moves in the medium of the FS, it carries its fields with it just as the shell does while moving in the air medium. The fields are the very structure of the electron and the only reality (energy) of it, since the center within the interface is void without any energy. Electron under acceleration is reacted by the fluid space due to its void-center. Its trajectory while subjected to vertical magnetic field changes, giving an impression that the mass has increased. Rest mass and relativistic mass are the same. In fact, relativistic mass is a false concept.

March 8, 2013

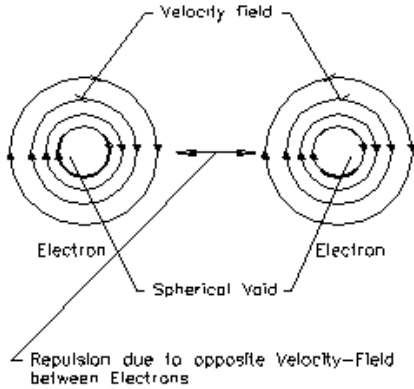
If the electron vortex rotates in opposite direction, it has the properties and behavior of a positron. The vortices of electron and positron attract, their interfaces are crushed due to the inward acceleration field ( $2.25 \times 10^{31} \text{ cm / s}$ ) together to zero-radius and the velocity fields (flow velocity of FS) in the two vortices superpose and the oppositely rotating interfaces nullify. As the fields die – the annihilation process starting from the position of the annihilation – a pulse of light is seen, known as gamma ray, but more correctly to be termed a gamma pulse. Inward acceleration field  $c^2 / r_e$  on the electron interface is the highest field in the universe.

Simply stated, the substratum is inherent with circulation, and is itself energy. Before creation of the electron, this energy from within the interface at the electron center is pushed out, sending a spherical compressive front into the whole of the universal space and appears as inward fields of gravitation and electrostatic in electron structure. It can also be said that cosmic energy in an infinitely small amount is trapped

in electron structure, which is only a field distribution, and is retrieved by the substratum when the particles are annihilated in each unit of one electron and one positron. These particles are fundamental and assemble all matter comprised of neutrons, protons, atoms, molecules, planets, stars, galaxies. The creation process of matter is “transfer of energy from the space substratum to matter and back from matter to space substratum at the end of the creation cycle”. The substratum has eternal existence. When dynamic, it becomes cosmic energy. Creation and annihilation continue in eternal cycles.

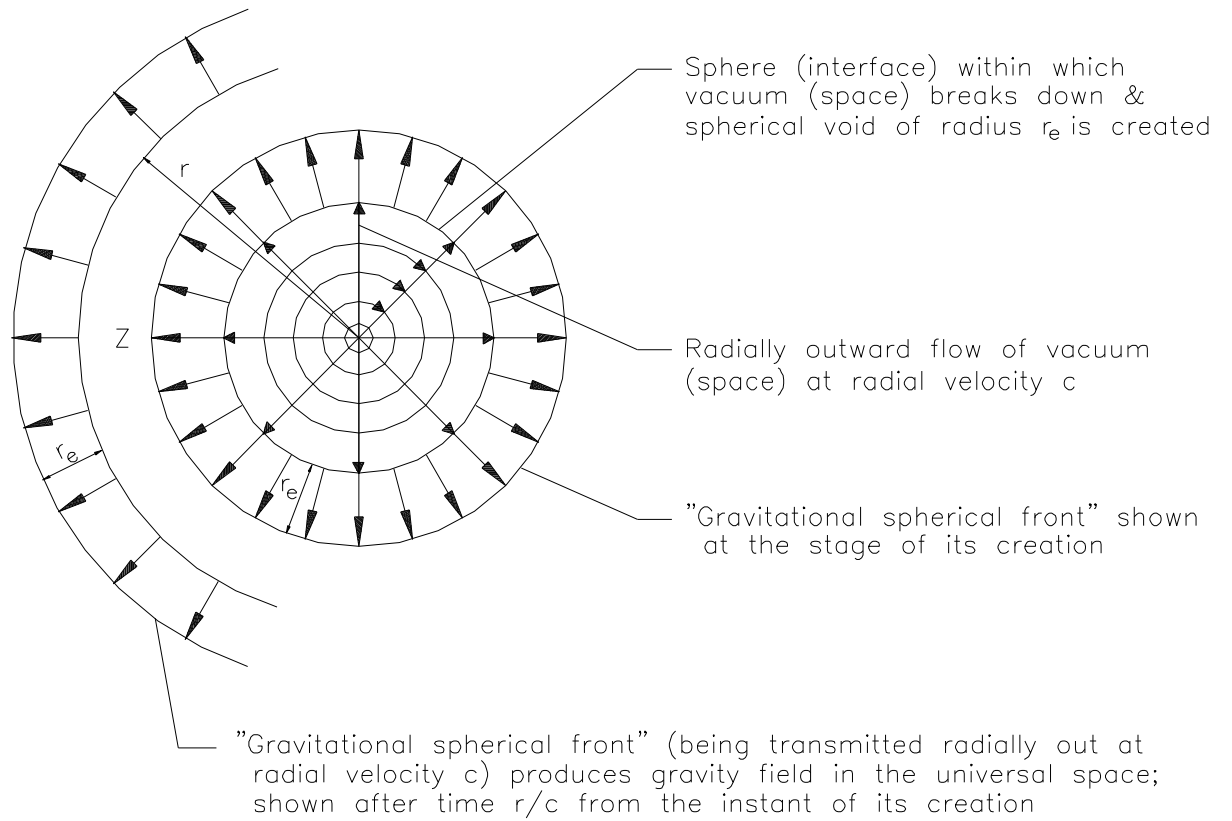


(a)

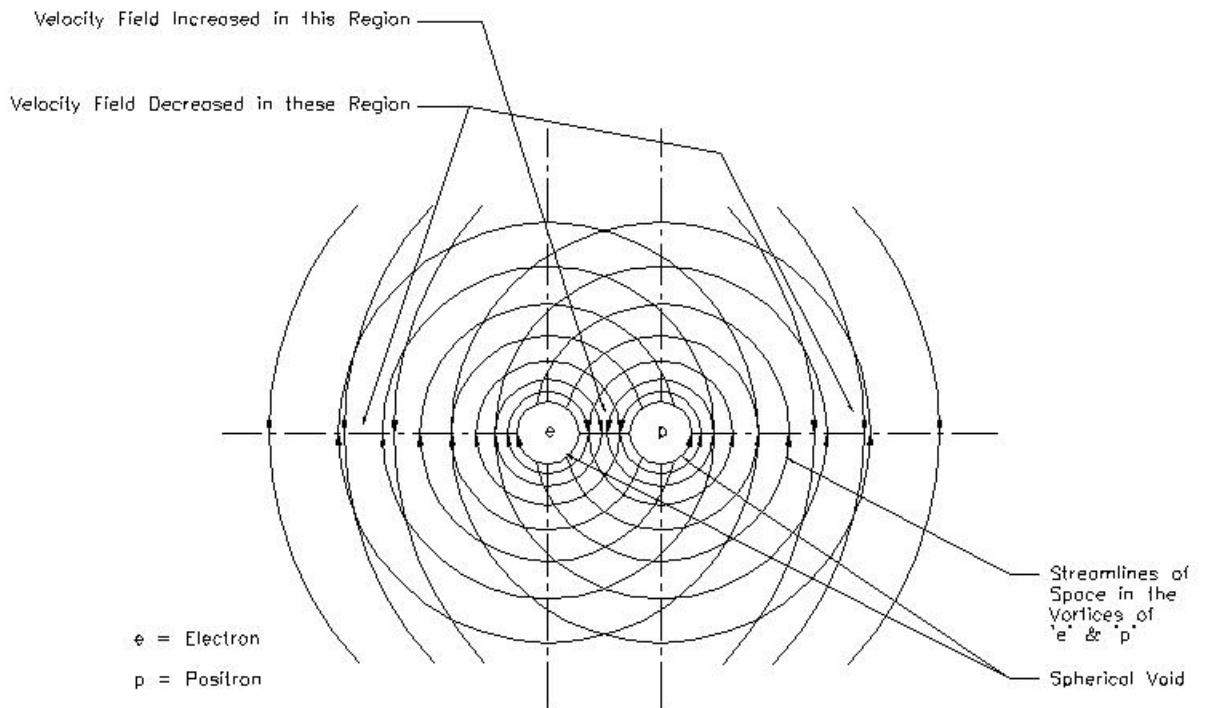


(b)





### Creation of Electron



1) Absolute properties of Space: Non-Material. Non-Viscous. Incompressible, Zero-Mass Fluid, with Limiting flow equal to the Velocity of Light.

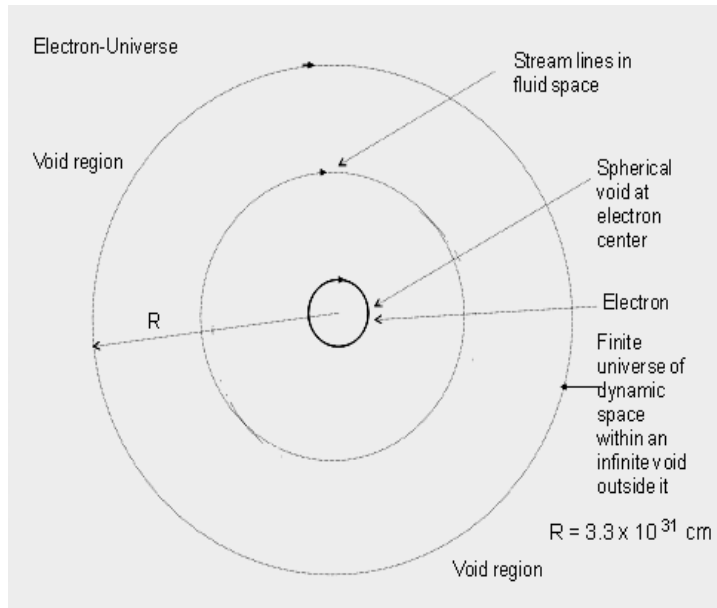
2) Due to Electrical Force of Attraction, the particles get Annihilated.

Quoting from: A History of the Theories of Ether and Electricity - Sir Edmund Whittaker:  
For clear understanding on the light pulse consequent to the annihilation, taking an example, "Let two oppositely charged conductors, placed close to each other, give rise to electrostatic field throughout all space. In such a field the vector potential is everywhere zero, while the scalar potential has a definite value at every point. Let these conductors discharge each other: the electrostatic force at any point of space remains unchanged until the point in question is reached by a wave of disturbance, which propagated outwards from the conductors with the velocity of light, and which annihilates the field as it passes over it". When an electron and a positron interact and get annihilated, the electrostatic field at any point in space remains unchanged until the point in question is reached by a pulse of light, which propagated outwards from the point of annihilation with the velocity of light, and which annihilated the field as it passed over. The field annihilation produces the pulse of light.

During my talk with the Theosophical Society members at Chennai (then Madras), on "The Substantial Space and Void Nature of Elementary material Particles (1976), I learnt that Leadbeater and Anne Besant in their booklet "Occult Chemistry" (1919) had defined the fundamental matter as a tiny bubble containing complete void within and existent in the basic space medium named Koilon. The conclusion therein, as stated is: We think of matter to be solid but it is consistent of void-bubbles, and we think of space as void but is full with koilon. This picture of space and matter and their structural relationship compared closely to my presentation of the electron's structure during my talk.

March 9<sup>th</sup>, 2013

The Philosophers have reminded us of the close connection between the micro and the macrocosmic design. Consider a single electron at the center of the universal substratum, depicted below. It contains a void-center, and its energy field spread out in the whole universe. The universe has the fluid substratum throughout its finite volume and the endless nothingness beyond. The substratum is eternal. The electron is eternal as long as it does not come close to a positron – its own mirror image – and annihilate each other.



The creation of the electron throws out a volume of the FS equal to the volume of the void from within the interface, which creates gravitational and electrostatic fields. Their directions get reversed due to the central void. The inward acceleration field  $c^2 / r_e$  on the interface is the highest field in the universe equal to  $(2.25) 10^{31} \text{ cm} / \text{s}^2$ . During annihilation this field displaces from the interface to the electron center. From this displacement, when the interface collapses to zero radius, energy calculated is  $(4/5) m_e c^2$ . Distribution of electrostatic field energy, starting from the interface to the universal boundary is calculated to be  $(\pi / 10) m_e c^2$ . The electron has an intrinsic angular momentum due to spinning of the interface calculated as  $(4/5) m_e c r_e$ . In fact this is the equivalent of Planck's Constant for the electron. Magnetic moment of the electron is calculated as  $(3/4) q_e c r_e$ . Each atom has its own constant close to the Planck Constant.

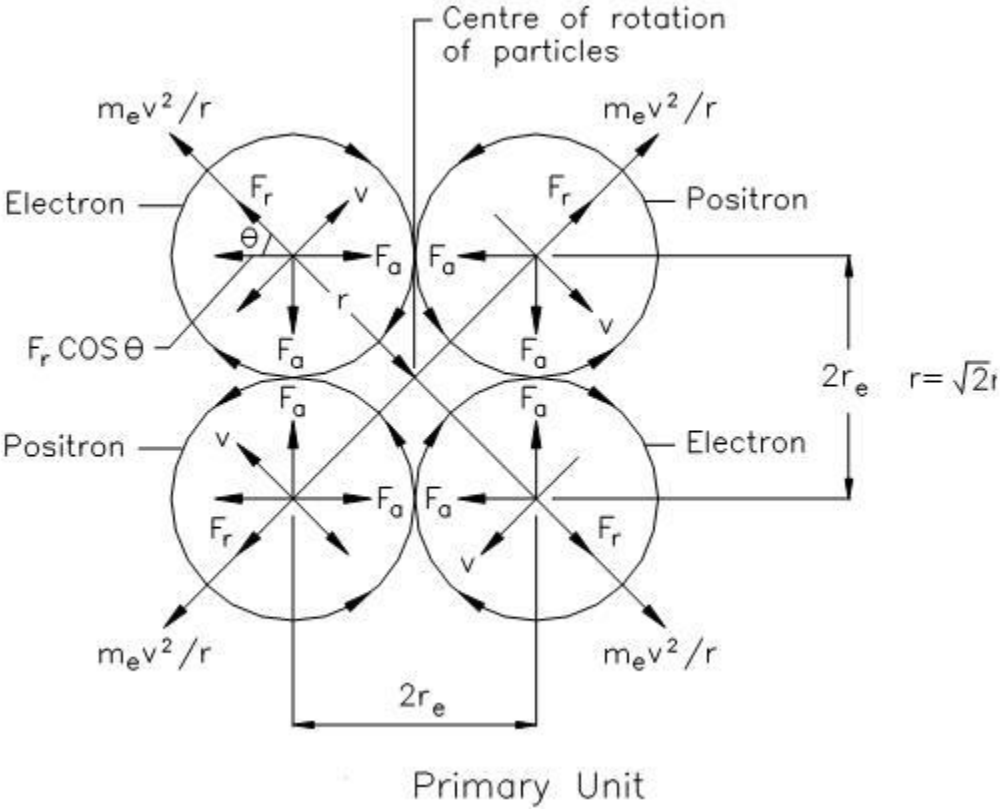
Proton and neutron are created due to interaction between electrons and positrons. Two electrons and two positrons assembly will have diagonally repulsive electrical force and attractive force between the adjacent particles. With this assembly as the primary unit, neutron can be built up. A vortex enclosing the neutron shows behavior of a proton. (See sketches, below). A proton vortex traps an electron showing property and behavior of a hydrogen atom.

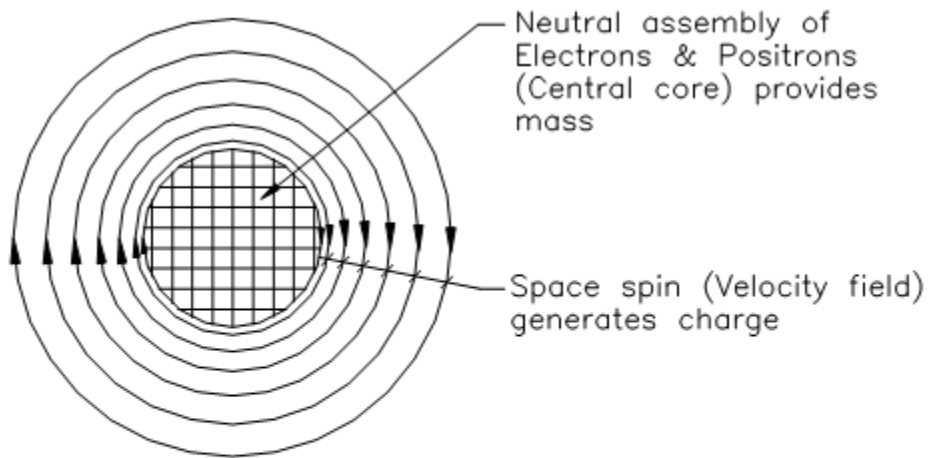
Protons with external vortex repel each other like two electrons, but if two protons happen to be close and they are rotating in opposite direction, they will attract each other but cannot annihilate because annihilation is possible only between an electron and a positron.

All nuclei are enclosed within vortices –each within its own vortex –and provide inward force on the nucleus, which acts opposite to the repulsive force between the protons in the nucleus. In the interior of the stars where circulation of FS reaches the light speed  $c$

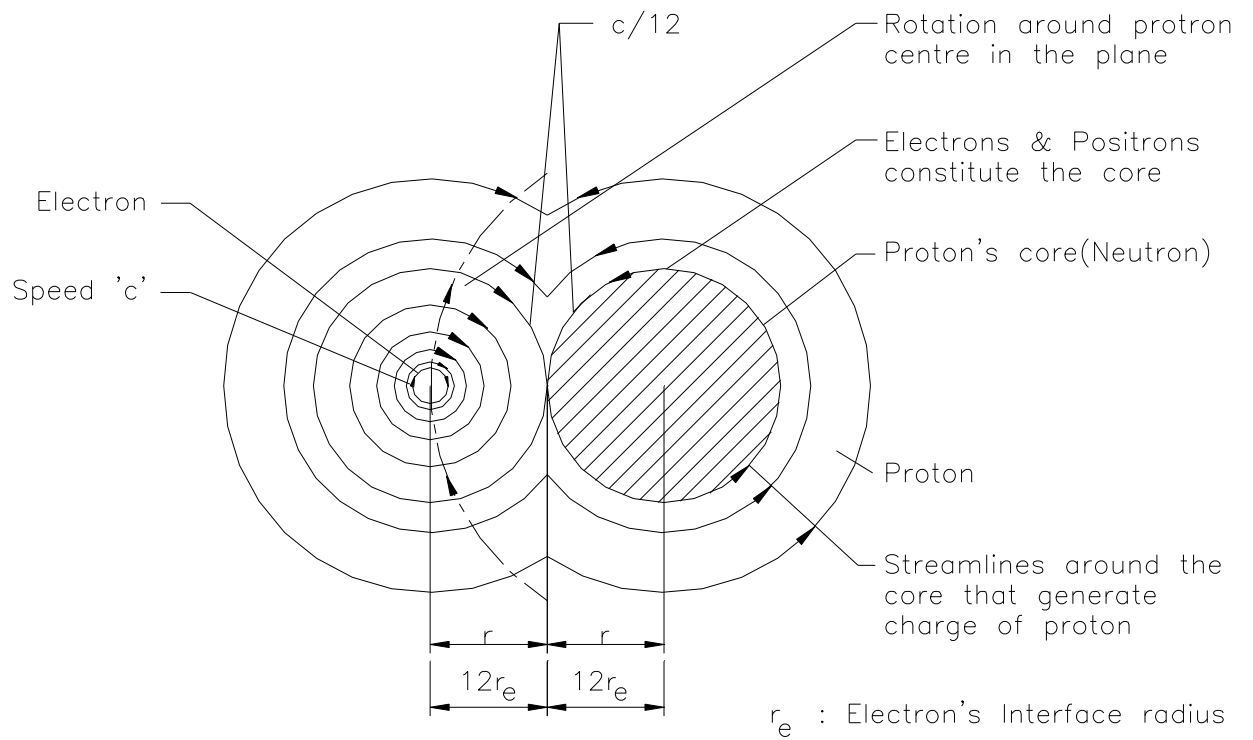
and electrons, neutrons and protons are created, nuclei are formed by the neutrons and protons entering into the nuclear vortices – thus forming nuclei of higher weight. With more and more protons in the nucleus their repulsive forces become greater than the inward force of their vortices –this leads to radioactivity. Presently, nuclear physics has not discovered the inward force on the surface of nuclei.

Rene Descartes conceived gravitation due to a pressure on the earth surface from the surrounding ether vortex. He was right because as we see now the electron has a void center, and all bodies composed of electrons (positrons), though with their independent central interfaces, will have effect of aggregate void volume, thus causing an inward pressure on the earth. Two bodies will get pushed to each other from the gravity field in the substratum.



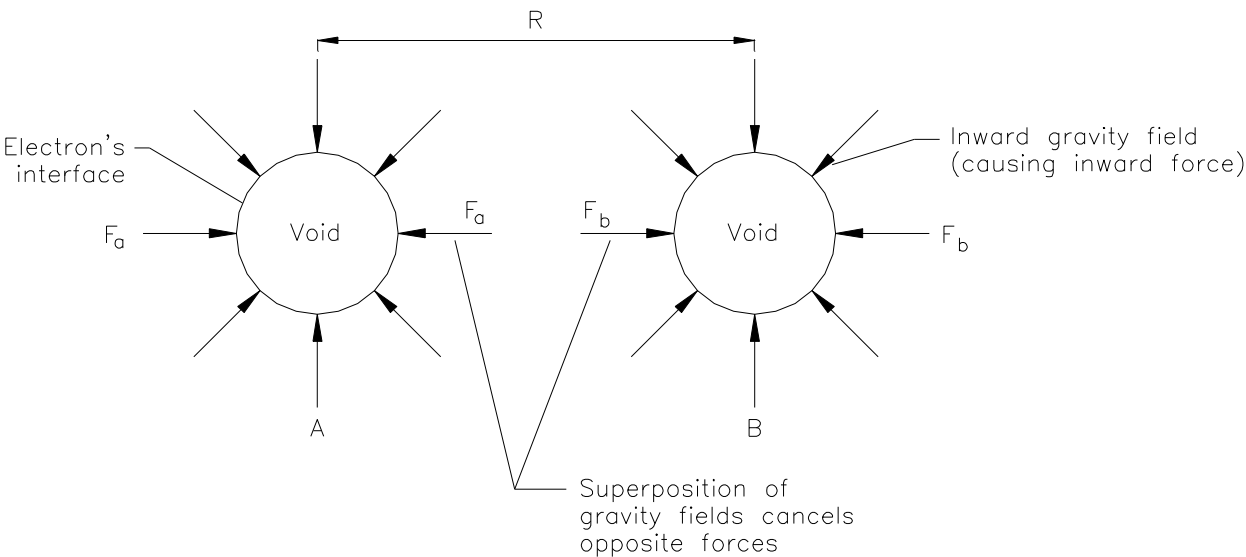


Proton



Hydrogen Atom

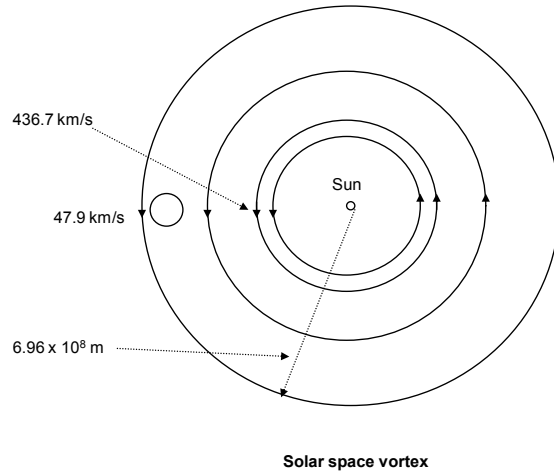
One wonders that the substratum being dynamic and itself energy, why it cannot be tapped to generate electric power by some suitable appliances? A passenger in a boat being carried by a flowing stream cannot tap the kinetic energy of the stream. Space vortices moving cosmic bodies, rotating them, and also structuring matter among many other functions are already being utilized by nature. But there is also a unique way to utilize atom's electrostatic field in a conductor to produce free power without disturbing atomic structure. This new discovery is based on the fact that collinear elements of electric current are attractive rather than repulsive. Late Prof. S. Marinov through his own theory, and also me through SVT reached the above conclusion. In a DC generator the positive polarity P has shortage of electrons while the negative polarity N has in excess. Electrons from the neutral atoms from the stationary circuit conductors are attracted by P polarity and in turn are sucked by the armature conductors – the effect continuing through the conductors to the N polarity and throughout the external circuit. Work done is by the electrostatic field of the atoms attracting the electrons but without any loss of their structural energy. This phenomenon can be developed to bypass Lenz's law to a good extent and design electrical generators with efficiency crossing the 100 % barrier.



March 10<sup>th</sup>, 2013

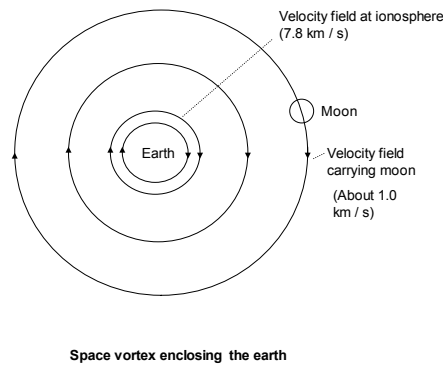
Rene Descartes was spared inquisition, unlike Galileo, because he maintained that the earth does not move relative to its surrounding fluid space which, as a vortex enclosing the planet, rotates it axially. Also for orbital motion Descartes introduced celestial vortex motion that carried the planets without any relative motion with their surrounding ether vortex. Existence of these cosmic vortices has been proved by

deriving gravity field on the earth surface and also for all the planets and the sun.



The sun has a flat planetary plane at right angles to its axis of rotation in which the planets lie. A vortex of FS encloses the sun, rotates it axially. The vortex has streamlines with velocity field (flow velocity of FS) at each point. (Hereafter, “vortex” will mean a “vortex of the fluid space”.) It has been shown that the velocity field falls inversely as the square root of the distance from the sun’s center (SVT). This matches with Kepler’s law on the orbital motion of the planets. With the orbital motion of mercury at 47.9 km/s, velocity field tangential to the surface of the sun is found to be 437.7 km/s. This means that the gaseous matter at the sun’s surface causing “wind” could have average velocity in this range. As recorded by NASA wind velocity varied between 380 and 500 km /s that averages out to 440 km/s. Very close result! Inward acceleration due to this velocity divided by the radius of the sun:  $(4.367 \times 10^5 \text{ m/s})^2 / 6.96 \times 10^8 \text{ m} = 274 \text{ m / s}^2$  which is the same as accepted today. Can there be any better proof to the existence of solar vortex in the planetary plane?

Earth is enclosed in a vortex that rotates it axially and carries the moon in orbit. From its orbital motion, the velocity field in the vortex in the ionosphere region can be calculated – velocity field falling from the earth towards the moon inversely to the square root of the distance from the earth. This comes to 7.8 km/ s. Square of this velocity divided by the earth’s radius comes to 9.55 m / s. Accepted value is 9.81 m / s<sup>2</sup>.



Velocity field rotating the core of the galaxy is similarly calculated. The galaxy is rotated externally by a vortex carrying the stars and their planets in it. The solar system is  $2.62 \times 10^{22}$  cm away from the galaxy orbiting at 220 km /s. With the relation that velocity field in the vortex falls down inversely as the square root of the distance from the galactic center, it is found that at a distance of  $1.408 \times 10^{16}$  cm velocity field reaches the limiting circulation velocity  $c$ . This is 203000 times more than the solar radius within which matter is constantly created from space circulation.

March 11, 2013

Within the volume of this radius, electrons and positrons are created. Half the electrons are likely to be annihilated producing intense gamma radiation. The remaining particles will produce particles and atoms starting from hydrogen. The galaxy is active throwing jets of hydrogen to this day.

As per the current cosmology, a planet in orbit is subjected to centrifugal acceleration, which creates an outward force that is balanced by the inward gravitational pull by the sun. As per SVT, the planets are taken in orbit by the solar vortex and have no relative motion with respect to the surrounding vortex. There is no centrifugal force pushing a planet away from the sun, instead there is a repulsive electrical force between the planet and the sun. Like the electron with spinning interface having charge, planets, satellites, stars and galaxies with axial rotation possess electrical charge. This force is in opposition to gravity force from the sun. All planets with axial rotation are enclosed within their individual vortices. Their surface rotation creates electrical charge. The sun and the planets in the solar system with axial rotation in the same direction develop similar charge and hence repulse each other. Electrical repulsive force between the planets and the sun is not recognized by current physics. The result is that during planetary alignment, electric repulsive forces are not calculated, nor is the inward nature of gravity forces taken into account.

It is believed that the electron during acceleration loses energy. The vortex of electron cannot lose any of its field energy. That is why an electron, despite several interactions,



maintains all its properties without any loss of structural energy. This misconception led to the speculation that the orbital electrons in atoms, due to their acceleration, lose energy and will spiral down into the nucleus. The region around the nucleus is considered a void and hence the above serious misconception crept into physics and is made use of by the founders of quantum theory in an open field to explain emission of light from the orbital electrons when changing their orbits – a strange explanation never before tried in the history of science.

Planck's Energy Equation is based on the concepts of Maxwell and Hertz that electromagnetic (light) energy is given off from electrical oscillators. Planck believed that the orbiting electrons inside the atoms of a glowing solid-emitter radiated electromagnetic waves in different quantities, the frequency being determined by the vibration of the oscillator. The classical picture was revised by Planck based on his observed experimental fact when he assumed that an oscillator, at any instant, could have its total energy (potential, kinetic) only as an integral multiple of the energy quantity:  $h f$ , where  $h$  is a universal constant (experimentally determined) and  $f$  is the frequency of vibration of the oscillator. Thus, the light energy can be absorbed or emitted in an indivisible quantum of magnitude:  $h f$ . Planck energy equation is:  $E = h f$ . It can also be written as  $E / f = h$ .

It is seen that “ $h$ ” is the energy associated with one oscillation of the vibrator, on the following basis. It has been shown in SVT that a time-varying gravitational potential at the surface of the nucleus of the atom produces light and that one shell of light produced due to atomic vibration has energy close to the experimentally determined value of  $h$ . Though Planck believed that the oscillator emits its own energy (kinetic, potential) possessed by it structurally, by deriving  $h$  from the varying gravitational potential in space external to the oscillating atom, a new fact has been brought to light: that the “least energy” produced (in each shell of light) is “ $E / f$ ”. Therefore, the quantity “ $h f$ ” is, actually the energy contained in  $f$  numbers of successive light-shells produced by the oscillator in unit time, and cannot be an “indivisible quantum” of light-energy available at an instant, which Planck concluded. Further, the structures of the oscillators either electrons, nuclei or atoms, are not suited to absorb or emit energy as these are vortices of fluid space and composed of only electrons with central void. This is a serious misconception continuing since Maxwell's theoretical conclusion that oscillations of electric current lead to a loss of energy from the system in the form of electromagnetic waves. Atoms do not have any storing mechanism to store energy for a unit time, make a bundle of energy and emit at one instant after unit time.

The intrinsic angular momentum of electron derived from its vortex structure:  $L = (4/5) m_e c r_e$ ; substituting the values of  $m_e$  and  $r_e$ , it is found to be 7.5 times less than the Planck constant. However, for an average atom, Planck constant computed in SVT is close to the experimentally determined value.

The dimensions of  $h$  are that of angular momentum—same as the angular momentum of electron given above. Though, the angular momentum of electron is 7.5 times smaller than the accepted value of the Planck constant, the nearness of the two values may lead to speculation that the orbital electrons in the atoms are indeed the electric oscillators that produce light, as imagined by Planck and others, and as is also the prevalent concept. In this conjecture, however, the following difficulty arises. An atom shows overall electrical neutrality in the region beyond the orbital electrons, where

only the gravitational field of the atom should exist. On account of this,  $h$  has been computed theoretically with the considerations of the time-varying potential of gravitation alone (SVT). This is not to say that a charged atom will not produce light; rather the value of  $h$  obtained from an assembly of charged oscillating atoms should be marginally different, and so also the nature of light (frequency, wavelength) produced.

In a hollow cavity, the equilibrium distribution of electromagnetic radiation energy, experimentally obtained, shows that at low frequency the energy is proportional to  $f^2$  while at high frequency there is an exponential drop. The theoretical energy distribution as per Rayleigh-Jeans law gives excessive energy for higher frequency such that, if integrated over all frequencies, the total energy becomes infinite. Though, classical mechanics places no limit to frequency of mechanical oscillators (atoms), a limit to oscillator's frequency is imposed in SVT by the motion of the fluid-space submerging the atomic vortices (oscillators). The displacement of the atoms from their mean positions displaces the fluid space, which has a limiting speed  $c$ . If an average radius of atoms is taken as  $1.5 \times 10^{-8}$  cm, the displacement of an atom on either side of its mean position up to a length equal to the radius will involve total displacement relative to space as  $3 \times 10^{-8}$  cm. Time required for the fluid space to move up to this length at its maximum speed is:  $3 \times 10^{-8}$  cm /  $(3 \times 10^{10}$  cm/s) =  $10^{-18}$  s. Nos. of light shells produced in one second due to atomic oscillation will be  $10^{18}$  which is the frequency of the light produced. Thus, maximum frequency of the oscillators in thermal radiation, excluding X-rays and gamma, should be limited to about  $10^{18}$  /s. It can therefore be inferred that the exponential fall of energy distribution in cavity at higher frequencies is due to the reaction from the fluid space at higher oscillation frequencies. The classical concept that: to determine the total energy within a cavity (black body radiation), integral has to extend over all the frequencies is a faulty approach, based on the belief that atoms oscillate in a void-space, which can cause no reaction on the atoms and hence there can be no limit to their frequency of oscillation.

#### Explaining Photoelectric Effect – Einstein's Error

In the vortex structure of the atom, the vortices of the orbital electrons, interlocked with the velocity fields of the atomic vortex, are carried around the nucleus by the velocity field of the vortex. As is well known, the outer orbital electrons, if interacted with light of appropriate wavelength, are released in photoelectric effect. It is now believed that the photo-electrons absorb energy from the incident light for their release, and also for the kinetic energy that they possess.

On this phenomenon, the following new aspects are to be taken into account. Absorption of energy by an electron is, structurally, impossible. The orbital electron, already in circulating motion, possesses kinetic energy due to the velocity field of the atomic vortex. This energy is computed in SVT: The nuclear radius of an average atom is,  $r_n = 2.37 \times 10^{-9}$  cm. Like the electron, the nucleus too has its axis of rotation and, hence, the maximum electrostatic field is confined in a circular vortex in a plane (more or less), at right angles to the axis of rotation. In an irrotational vortex, space-circulation velocity falls inversely as the radius of rotation. In the electron vortex, in the diametrical plane transverse to the axis of rotation,  $c r_e = \text{constant}$ , (SVT). Applying this relationship also on the nuclear surface,  $c r_e = u_n r_n$ , where  $u_n$  is the maximum tangential velocity of the fluid space on the nuclear surface in the diametrical plane at right angles to the axis of rotation.

Substituting the known values of  $c$ ,  $r_e$ , and  $r_n = 2.37 \times 10^{-9}$  cm, we have,  $u_n = (3 \times 10^{10}) 4 \times 10^{-11} / 2.37 \times 10^{-9}$  cm =  $5 \times 10^8$  cm/s. This velocity falls in the atomic vortex (around the nucleus) inversely as the radius of the fluid space circulation. Supposing accepted value of the radius of rotation of the outermost orbital electron to be  $10^{-8}$  cm, the fluid-space circulation-velocity, which is also the tangential-velocity of the orbital electron, will be

$$v = u_n (2.37 \times 10^{-9} \text{ cm}) / 10^{-8} \text{ cm} = (5 \times 10^8 \text{ cm/s}) 2.37 \times 10^{-9} \text{ cm} = 1.2 \times 10^8 \text{ cm/s.}$$

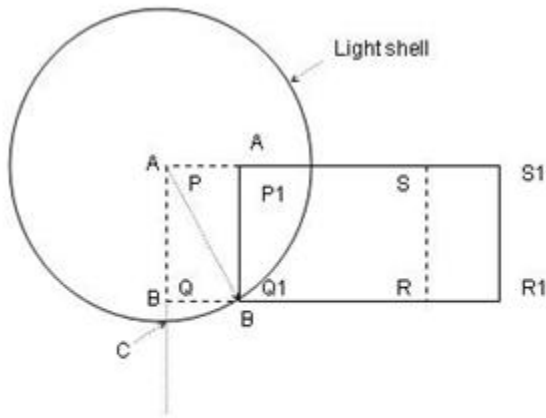
From this, the kinetic energy of the orbital electron is:

$$E_{\text{kin}} = (1/2) m_e v^2 = (1/2) 10^{-27} \text{ gm} (1.2 \times 10^8)^2 = 7.2 \times 10^{-12} \text{ erg.}$$

Experiments show that the kinetic energy of the photoelectrons is about  $8 \times 10^{-12}$  ergs, which is so very close to the value obtained above. It is thus seen that Einstein mistook the source of the kinetic energy of the photoelectron, thinking that it came from the incident light; whereas, the reality is that the velocity field in the atomic vortex projects the electron after the incident light has triggered its release. This shows that the concept of the photon-nature of light, with indivisible quanta of energy possessed by each photon, is most misleading, which led Einstein (who believed in emptiness of space, as is evident from the formulation of special theory of relativity) to wrongly treat light-energy "h f" as the instantaneous value (when in reality, this energy is produced in unit time); because this way, the kinetic energy of the photoelectrons, as observed experimentally, could be explained without going deeper into the structure of the atom (that became known later - about 1912 - through Rutherford's experiments) to determine whether the photoelectrons have any other source in the atomic structure that imparts kinetic energy to them at the time of their ejection from the atoms.

Though, Planck integrated together the energy of f nos. of shells erroneously, he still believed that light energy is distributed uniformly over an expanding set of wave fronts. In contrast, Einstein conceptualized that the energy of light is not distributed evenly over the whole wave front, as the classical picture demanded; rather it is concentrated or localized in discrete small regions. With the help of both of these - energy integration by Planck and energy concentration Einstein - the right order of magnitude of the kinetic energy of the photoelectrons, as observed experimentally, could be achieved at an instant in the quantity hf. Planck's constant as well as the photon nature of light are the products of most serious misconceptions, yet they continue as cornerstones in the foundation of quantum theory.

The traditional concept of time was revised in special relativity. The following thought experiment reveals the fallacy of the often-quoted arguments in support of time dilation. The sketch (below) shows a platform in uniform motion with two observers A and B on it, and another stationary observer. The relativist's view is that 'if the observer A lights a match-stick creating a flash, the observer B sitting opposite to him will think that the flash has directly come to him along the route PQ, whereas, the observer C will see the path along PQ1, since, during the time the flash has reached him, the platform has reached a new location P1 Q1 R1 S1. The path of the flash does not look the same to the two observers B and C. Since the flash is moving with A, it seems to B taking a longer path; and if the speed of light is to remain the same, the longer path must seem to take longer time: time must pass faster for C'. The misconception on the nature of light in the above statement is the presupposition that "the flash is moving with A". Is the flash really moving with the observer A?



PQRS : Position 1: Platform moving at velocity  $v$  relative to space.

A and B : Observers seated on the platform.

P' Q' R' S' : Position 2: New position of the platform.

C : Observer standing stationary at ground

The speed of light is independent of the motion of the source. Hence, the uniform motion of A cannot be imparted to the flash of light that he creates by striking a match. To further pinpoint the relativistic misconception on the motion of the flash along with A, let us suppose that A has with him an electron and a positron that undergo at some instant annihilation following which the point of annihilation along with the field structure of the particles will get fixed in space, while the observers A and B will move on. Supposing B can see the point of annihilation P even prior to the instant when the light shell consequent to annihilation reaches him, he will see that P is shifting to his left due to his own motion (relative to space) to the right along with the platform; and by the time B reaches Q<sub>1</sub>, he will see that the light shell has taken the route PQ<sub>1</sub> to reach him; PQ<sub>1</sub> is the same length as seen by C. Therefore, the assumption of the relativist that the flash of light is moving with A is erroneous. Further, if the stationary observer C stands on the ground at the point of the light shell shown by the arrow, then his distance from A will be the same as PQ<sub>1</sub>. The shell will reach both B and C at the same instant. Time dilation and simultaneity are clearly superfluous in special theory of relativity.

The universe is conceived to be a finite and vast spherical substratum of fluid space in circulation about one of its diameter, existent in an endless nothingness. This is the primordial cosmic energy, ever existent – the terms of “creation” and “annihilation” that are applicable to matter are not relevant to it. Part of the space circulation is transferred into vortices of matter starting from the electron to nuclei and atoms, planets, stars, and galaxies, and their orbital motions, creating, assembling, spiraling and moving outwards from the center towards the universal boundary – where their gravitational forces get asymmetrical, reverse, sending them back towards the center. On the return path, wherever the distances between the galaxies reduce and their rotational directions are opposite, electrical attraction makes them collide, stars collapse on each other and the process of annihilation in units of an electron and a positron begins.

Space circulation trapped in matter is retrieved and back to the start – the creation cycle begins again. It is a cyclic universe – from space circulation to matter and from matter to space circulation.