

## Bulletin of

## THE THEOSOPHY SCIENCE STUDY GROUP

India

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## An Analysis of the Principles of Absolute through Scientific and Spritual Laws

THE omnipresence and omnipotence of God as proclaimed by the seers and sages makes God the basic Substratum which can generate from itself cosmic matter, fields of matter, and energy for the working of the universe of invisible space and visible manifestations of material bodies. Adi Sankaracharya's realisation in Alma-Bodha is: "Like bubbles in the water, the worlds rise, exist and dissolve in Supreme Self (Parmeswara) which is the material cause and the support of everything". This is the highest spiritual truth as regards the origin of the universal energy for the generation of cosmic matter and their harmonious movements.

For Science to reach the above conclusion, it must first develop to that stage where it can have the grasp of physical nature of fundamental state of universal energy and processes of its transformation into different states

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like Kinetic, gravitational, electromagnetic and nuclear. The discovery of the fundamental field which can create the fields pertaining to each form of energy is also a related issue needing exploration to the deepest level. And, equally impor-

the understanding of the above fundamental phenomena of energy, matter and fields of matter, their generation and interconversions have not yet been fully gained, the current scientific knowledge can at best point towards the great Unity rather than reaching the same through positive conclusions.

That matter and energy are interconvertible is quantitatively well proven by modern science. So also the distinction between matter and field of matter has disappeared; matter, field and energy are now generally taken to mean the same entity. Such conclusions though pointing towards some underlying unity that may exist at the base of matter, energy and fields, yet fail to reveal their basic physical nature, as also their relationships with the underlying unity itself with regard to their generation and maintenance. In the absence of adequate knowledge on the physical aspects of basic quantities like mass, charge, field and energy that lie at the foundation of the current physical theories, and also absence of an universal theory that can unify these basic phenomena, a serious doubt arises whether the quantities presently considered fundamental are truly fundamental, not reducible to any other more basic entities, or the current physics shall revise its concepts on space and matter through an alternate approach which will not only successfully overcome the obstacles to the present theories but also reveal the underlying unity in its bare form.

The point in question can be better made through a concrete example. An

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tant is the knowledge on the physical aspects of conversion of universal energy into fundamental particle or particles of matter which can further aggregate into cosmic matter. Since

electron shows the behaviour of an universal unit of charge and the smallest mass among stable particles. Its electrostatic field falls inversely as square of the distance from the centre. A question arises whether the electrostatic field varies continuously up to the electron centre or there is a discontinuity around the centre within an ultrasmall fieldless zone. If the continuity of the field all the way up to the centre is supposed, the electrostatic field of electron should possess an infinite amount of energy which is an impossible proposition that presents a great problem to modern theory of electron. If however, a fieldless zone at the electron centre in an ultrasmall region is supposed, a new and hitherto unknown medium of fieldless-void<sup>2</sup> is to be incorporated in physical theory of electron structure; it will bring about radical changes in our current concepts of space and matter, though the difficulty of infinite energy in electrostatic field of electron is avoided.

The concept of fieldless-void is unprecedented in physics because the absolute vacuum is presently considered to be the most basic state of space, which can sustain and transmit all kinds of fields. The absolute space itself when devoid of matter and fields is presently considered to be empty and void. Whereas the fieldless-void proposed above is that state of absolute vacuum which at electron centre has broken down into an ultrasmall spherical volume and which can neither generate nor transmit any field through it since the absolute vacuum is non-existent within the void. The fieldless-void can possess no positive energy, as energy cannot be located without field. With the centrally located void and the fields emanating from its spherical boundary spreading in the whole of universal space, the behaviour of mass, inertia, charge and field of electron are indeed explainable and thus the absoluteness of space can be re-established in physical theories of space and matter.

With this model, the modern view of energy distribution at electron centre in highly condensed form, and real

fields in empty space, is reversed to energyless fieldless-void constitution of electron and dynamic space of absolute reality which generates fields as its own modes of motion, acceleration, energisation and de-energisation. The only medium of reality then becomes the absolute space (absolute vacuum)—the Akaśa—which generates matter like bubbles in water. The import of spirituality shall become evident through scientific logic as well, but only after the recognition of void at the heart of fundamental matter, and everful Akaśa (space) in which the Principle of Vishnu resides. "All the manifested world of things and beings are projected by imagination upon the substratum which is the eternal all-pervading Vishnu, whose nature is existence-intelligence, just as the different ornaments are all made out of the same gold".

The void structure of electron is also supported by the clairvoyant observations recorded in *Occult Chemistry* by Annie Besant and C.W. Leadbeater. "These units are all alike, spherical and absolutely simple in construction. Though they are the basis of all matter, they are not themselves matter, they are not blocks but bubbles. ... Just as bubbles are not water but are precisely the spots from which water is absent, so these units are not kailon, but the absence of kailon—the only spots where it is not—specks of nothingness floating in it, so to speak, for the interior of these space-bubbles is an absolute void to the highest power of vision that we can turn upon them. ... The worlds are built out of these voids, these emptinesses."

H.P. Blavatsky wrote in 1880's on Akaśa in relation to matter as follows, in *The Secret Doctrine*, I. 78fn, "Whatever the views of Physical Science upon the subject, Occult Science has been teaching for ages that Akaśa (of which Ether is the grossest form), the Fifth universal cosmic Principle—to which corresponds and from which proceeds human Manas—is, cosmically, a radiant, cool, diathermanous, plastic

matter, creative in its physical nature, correlative in its grossest aspects and portions, immutable in its higher principles." In "H.P. Blavatsky Collected Writings," VI, 124-26 we find, "Before closing, a word about the 'passage' of matter through matter. Matter may be defined as condensed Akaśa (Ether); and in atomizing, differentiates as the watery particles differentiate from super-heated steam when condensed. Restore the differentiated matter to the state ante of undifferentiated matter, and there is no difficulty in seeing how it can pass through the interstices of a substance in the differentiated state, as we easily conceive of the travel of electricity and other forces through their conductors. The profound art is to be able to interrupt at will and again restore the atomic relations in a given substance."

The few steps that science has to take for realising the underlying unity are: (a) to recognise the continuity, mobility, homogeneity of eternal space with absolute properties unlike any material medium; and (b) to develop theories that are based on the generation of the properties of matter and fields, from non-material substratum of space. "Realise that to be Brahman which is non-dual, indivisible, One and Blissful, and which is indicated in Vedanta as the Immutable Substratum realised after the negation of all tangible objects". "All objects are pervaded by Brahman. All Actions are possible because of Brahman; therefore Brahman permeates everything as butter permeates milk".

The highest of knowledge that scientific theories can reach is the revelation of the cycle of generation, sustenance and annihilation of cosmic matter from the dynamics of universal space, motion of material bodies in the universe, and the interdependence of space, matter and energy. The 'why' and 'how' of all phenomena pertaining to inert matter can be expected to be explainable by the developed science of the future. The scientific knowledge, however, is only a portion of the 'Sat' aspect of

Sat-Chit-Ananda—the Parmeswara—who has three basic elements in Him. "Realise<sup>2</sup> that to be Brahman which is Truth-Consciousness-Bliss, which is non-dual, Infinite, Eternal, and One, and which fills all the quarters above and below and all that exists between"

The knowledge of Consciousness and Bliss aspects of Brahman cannot be gained through scientific methods, simply because the physical properties like mass, inertia, charge and their associated fields with which science probes into the details of various phenomena exist only in material media of discreteness (voids), diversity, impermanence and imperfection, which are not the qualities of the Eternal and one, non-dual Brahman. "Nor<sup>3</sup> does the sun shine there, nor the moon, nor fire; to which having gone they return not, that is my supreme Abode".

The limited zone of science, though vast, is yet only an offshoot from the much wider and more basic domain of spirituality. The scientific laws of inert entitles breakdown when applied to spiritual phenomena which indeed defy explanations through rationality and logic developed by science due to the spiritual effects exercising control over the behaviour of matter.

The universe has gradations of qualities starting right from its basic element. "Let<sup>4</sup> us take the five elements one by one. The living being has the first one, the Earth as its base. Water, the second, is the basis for the Earth. Water is produced from Fire, the third element, Fire itself emanating from wind, the fourth; wind or Vayu arises from the Ether or Akaśa. Akaśa emerges from the Primal Nature and the Primal Nature is but the manifestation of one aspect of the majesty of God, or the supreme sovereign Atma, the Paramatma." (Here the elements of earth, water, fire and air in scientific terms, should correspond to the states of solidity, fluidity, heat, and gaseous elementary and nuclear particles respectively). While it is possible to frame a scientific theory

that the Akaśa in its dynamic state is the universal energy, and this universal energy in certain limiting conditions of motion creates matter as Akaśa-bubbles which foam and froth as universal matter, vide *Occult Chemistry* it is indeed difficult to imagine as to how did the Akaśa emerge from the Primal Nature, and what are the attributes of the Primal Nature? The phenomenon of emergence or creation can be applicable to the evolution of matter from Akaśa, whereas, the Akaśa itself being non-material in nature can remain self-existent, eternal and beyond the principle of creation and annihilation. But then what is the significance of 'emergence of Akaśa from the Primal Nature' as quoted above? The following quotation from the Upanishad Vahini by Bhagwan Sri Sathya Sai Baba, throws light on this deep mystery.

"The knowledge of mud and gold will give the knowledge of all pots and pans, as well as bracelets and necklaces. The mud and the gold are the truth; their modifications and transformations are temporary, mere name-forms. So too, the world, like the pot and the bracelet is just an effect, the cause being "Sat". Sat means "Is-ness"...the "Is-ness" that is the Universal Characteristic of all objects persists even in the absence of objects. Prior to creation there was only just this "Is-ness". There was no void; there was this "Is-ness" everywhere! When the "Is" was reflected in Maya or Primal Activity, it resulted in Iswara who partook of that activity to manifest as the Universe with the three elements of fire, Earth and Wind. All creation is but the permutation and combination of these three".

The "Is-ness" is the Akaśa in static state, the Primal Nature, the Eternal IS. It is the Universal Consciousness, the Chidakāśa, the Jnanam. "Like<sup>1</sup> Akaśa I fill all things within and without, changeless and the same in all, at all times I am pure, unattached, stainless and motionless". When the Conscious IS, the static Akaśa, partook of the Primal Activity, it became the Iswara,

the universal manifestation; Isaavaasyamidam Sarvam.

The phenomenon of God generates awe and wonder through its mysterious and subtle laws that rest on the eternal foundations of truth, righteousness, peace and love, and are far beyond the scope of scientific analysis.

<sup>1</sup> *Atma-Bodha* of Bhagwan Sri Sankaracharya by Swami Chinmayananda.

<sup>2</sup> "Space is the absolute Reality" by Paramahansa Tewari, Proceedings of International Conference on Space-time Absoluteness, Genoa 8-11, July 1982.

<sup>3</sup> *Sreemad-Bhagwad-Geeta* by Swami Chinmayananda.

<sup>4</sup> *Upanishad Vahini* by Bhagwan Sri Sathya Sai Baba.

# SPACE SUBSTRATUM

## Detection of Stationary and Dynamic Space Substratum

by Paramahansa Tewari, Chief Project Engineer, Kaiga Project Nuclear Power Corporation, Karwar, INDIA

**An electrical conductor placed at right angles to a magnetic field and rotated transverse to the field develops electromotive force (e.m.f.) which, as presently believed, is generated due to relative motion between the conductor and the magnetic field. When a stationary electrical circuit external to the rotating conductor is connected to it through appropriate brushes, electric power is drawn through the closed circuit. It is a well proven fact that the electric power flow in the circuit is supplied through the mechanical prime-mover that rotates the conductor across the field. The law of conservation of energy is applicable to this system of electric power generation, and consequently the highest possible efficiency cannot exceed unity.**

In contrast to the above principle of generation of e.m.f. in which relative motion between the conductor and the magnetic field is a must, a unique phenomenon of electromagnetic induction recently discovered<sup>1</sup> has the following distinguishing features:

1. There is no relative motion between the electrical conductor and the magnetic field.
2. The direction and magnitude of e.m.f. induced is the same as it would be even when a relative motion between the conductor and the field exists.
3. The load current through the rotating part of the conductor circuit does not create torque in opposition to the prime-mover.

While the first two effects were observed by Faraday in 1830, the third effect discovered by Bruce DePalma\* has the following crucial implications:

- Absence of opposing torque enables generation of electrical power at efficiency\*\* higher than unity which is in violation of law of conservation of energy.
- Additional electrical output power in excess of windage and friction losses and equivalent to the output is not

drawn through the prime-mover, and is evidently generated in the interatomic space (absolute vacuum, space) of the rotating conductor.

Modern physics is based on the validity of laws of conservation of mass and energy. The concept of existence of a basic substratum of "space with aether" prevalent in the last century has been, at the start of this century, changed to 'empty space' filled with fields due to presence of universal matter. However, in view of the positive experimental proofs of generation of electrical power, in kiloamperes and at d.c. voltages higher than three volts, in the above newly discovered phenomenon of space power generation a positive conclusion that space is a real entity which in dynamic state of rotation develops electric potential and becomes a source of electrical energy is inevitable.

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\*\* Experiments carried out by DePalma<sup>1</sup>, Trombly<sup>1</sup>, and repeated tests on many different types of machines and experimental setups by the author<sup>1,3,4</sup> have confirmed generation of electrical power at efficiencies as high as 400% and above.

## Space as Source of Cosmic Matter:

Scientific debates on the nature of space around the start of this century took a general view that space serves to transmit field (electromagnetic, gravitation) and, beyond that, it has no independent existence of its own as an entity that can generate energy in some form which enables it to be termed as a "real physical entity." In other words, the generally accepted position then taken was that space is an empty extension of "nothingness" without any physical attributes in which fields are somehow transmitted at enormous speed. Many refutations to the above view both experimental and theoretical, and claims on the existence of ether, that is, space with physical attributes, could not provide an alternate theory so as to change the widely accepted position of nonphysical nature of space.

A search for the most basic and universal source of fields of matter in general, and electron in particular, has led to the formulation (by the writer) of space vortex theory (SVT) in which physical space has been postulated<sup>2</sup> and it has been shown that the primary function of space is to generate cosmic matter and fields associated with it. Thus as per SVT, quite contrary to the modern view of physics, matter apart from space has no independent existence.

## Basics of Space Vortex Theory (SVT)

The absolute vacuum in SVT is a nonmaterial and mobile entity - an incompressible, nonviscous, massless and continuous medium, and its dynamical field equations or laws are formulated introducing concept of velocity fields, that is, velocity of space points in a vortex of mobile space. An electron is postulated to be an irrotational vortex of space with a spherical central void of sub-microscopic radius of about ten raised to the power minus eleven centimeters, within which the space with physical attributes develops discontinuity of energy field (Fig. 1). The property of electric charge of

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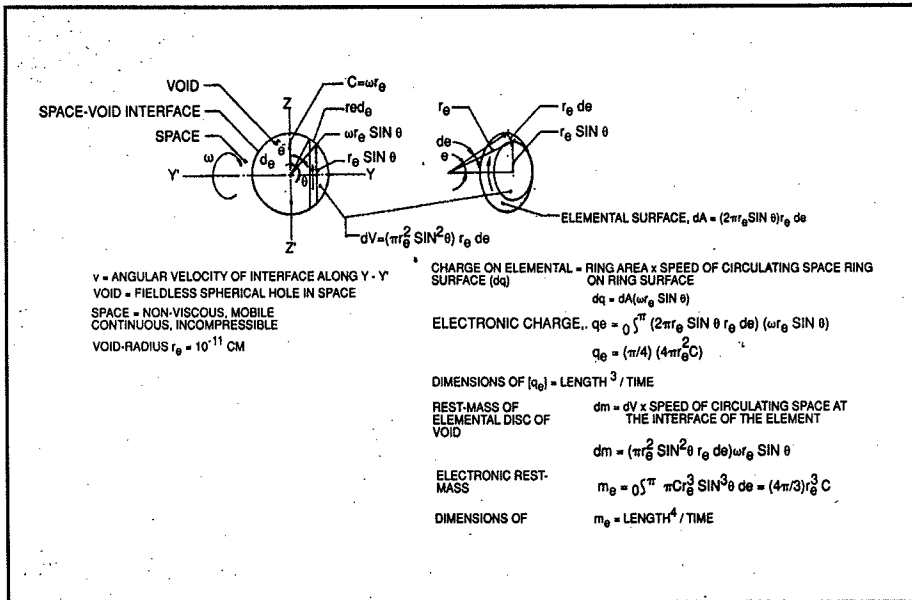


Figure 1. Void Center of Electron

electron and its electrostatic field can be shown to be the effect of rotation of space around the electron's center. The mass property of electron is seen to be arising due to the creation of a fieldless spherical void (hole) at electron's center where space rotates at the limiting speed of light. New equations that quantify mass and charge of electron and enable the computation of energy for its creation and annihilation are derived<sup>2</sup>. It also follows from the theory that the electron is the only fundamental particle that can build all the other stable particles of matter of the universe.

The generation of mass of electron from the mass-less medium of space is the unique feature of SVT, as it does away with the normal trend to scientific convention that every conceivable entity must necessarily have mass if it has to be real, that is, if it has to possess energy. An irrotational vortex of space with maximum speed of rotation less than speed of light will possess zero mass, and yet it will have electric charge energy due to velocity fields produced by space rotation. The creation of mass is essentially creation of void at electron's center due to limiting speed of rotation and breakdown of space.

The velocity field at a point in the neighborhood of electron determines the electric potential there. The breakdown of space at electron's center gravitationally energizes the whole universe creating gravity field and gravity potential. The decrease in gravity potential at a space point due to oscillation/movement of electron/matter creates electromagnetic (light) effect at that point. When an electron is annihilated, it is the decaying gravity and electrostatic potential at each point in space that is seen as light.

The property of zero viscosity and mobility of space up to speed of light in combination with the central void of electron, results in inertia property of electron in its motion in fluid space; the inertial property for all matter also arises due to the above effect since the electrons can be shown to be the fundamental particles of all stable particles of matter.

## Fundamental Equations on Electron's Charge and Mass

The following fundamental equations derived from the void-vortex structure of electron<sup>2</sup> are relevant to the computation of rotational charge energy produced due to rotation of space in the interatomic region of a rotating electromagnet as shown in Fig. 2.

Refer Fig. 1 which shows spin of space at void-space interface. At the elemental surface, tangential velocity of space is  $\omega r_e \sin \theta$ , which increase to its limiting value  $c$  at the diametrical section of the interface. The basic definitions for electron's charge, rest-mass and dielectric constant for vacuum are:

$$q_e = (\pi/4) (4\pi r_e^2 c) \quad (1)$$

where

$q_e$  is the electron's charge  
 $r_e$  is the radius of spherical void  
 $c$  is the light speed in vacuum

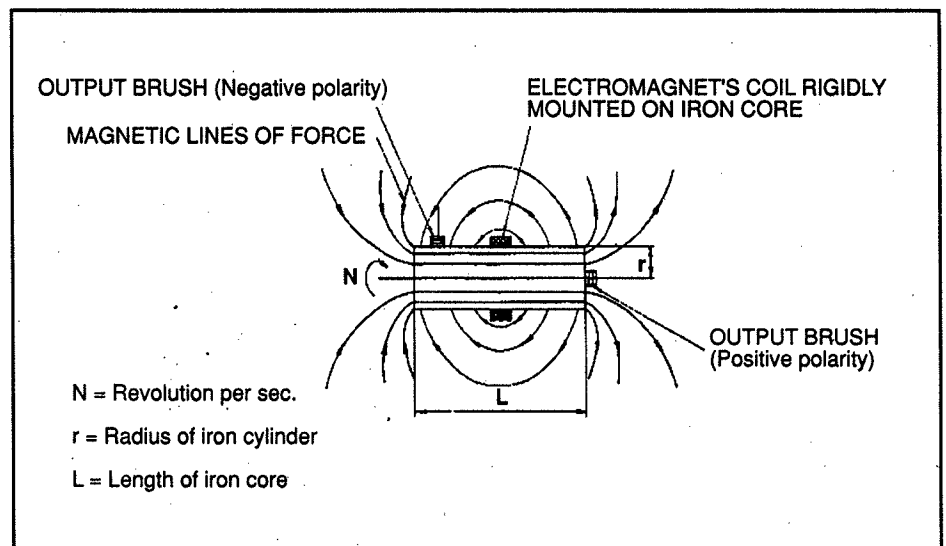


Figure 2. Rotating Electromagnet

# Space Substratum

Hence, it follows that the dimensions of  $q_e$  are

$$[q_e] = L^3/T$$

$$m_e = (4\pi/3)r_e^3 c \quad (2)$$

Where

$m_e$  is the electron's rest-mass.

Hence, it follows that the dimensions for mass  $m_e$  are:

$$[m_e] = L^4/T$$

Dielectric constant for vacuum  $\epsilon_0$  is given by,

$$\epsilon_0 = \pi/2c$$

Dimensions for  $\epsilon_0$  are:

$$[\epsilon_0] = T/L$$

Substituting in (1) experimentally determined value,  $q_e = 4.8 \times 10^{-10}$  CGSE units, and supposing the value of void radius  $r_e = 10^{-11}$  cm,

$$\text{cm}^3/\text{s} = (16) \text{ CGSE} \quad (4)$$

## Generation of Space Power

As shown in Fig. 1, for computation of electron's charge at the interface, the product of speed of spinning space at the elemental surface and its area  $dA$  is taken. This indicates that for all values of  $VF$  varying from zero to  $c$ , charge is produced. Therefore rotation of cylindrical surface  $A$  of an iron core (Fig. 2) of an electromagnet will create in its interatomic space rotational charge ( $q_r$ ) given by similar relationship as for electronic charge. Neglecting the area occupied by atomic nuclei and orbital electrons at surface  $A$ ,

$$q_r = \text{space surface} \times \text{rotational speed}$$

$$= (2\pi rL) (2\pi rN)$$

$$= 4\pi^2 r^2 LN \quad (5)$$

Converting  $q_r$  to CGSE units, from (4)

and (5),

$$q_r = 64\pi^2 r^2 LN$$

Nos. of electrons ( $N_e$ ) equivalent to  $q_r$  will be:

$$N_e = (64\pi^2 r^2 LN) / q_e \quad (6)$$

Energy in the electrostatic field of  $N_e$  electrons is computed as below:

Electrostatic energy ( $U$ ) of a point-charge as per conventional physics is given by:

$$U = q_e^2 / 2(4\pi\epsilon_0) [1/r] \epsilon_0 \quad (7)$$

Where  $r$ , the radial distance from the charge center, varies from zero to infinity. With void-center of electron, the minimum value of  $r$  is taken as  $r_e$  (and not zero) since void is fieldless zone. (The present difficulty in physics of infinite quantity of energy in the field of a point-charge is avoided with void-center structure of electron.)

Substituting the value of  $\epsilon_0$  from (3) in (7) and from (1) expressing  $q_e$  in terms of  $r_e$  and  $c$ ,

$$U = (\pi/4)^2 (4\pi r_e^2 c)^2 / 2(4\pi^2/2c)r_e$$

$$= (3\pi/16) (4\pi r_e^3 c/3)c^2$$

Which from (2) becomes

$$U = (3\pi/16) m_e c^2 \quad (8)$$

Net energy produced from rotational charge from (6) and (8),

$$E = (3^3/4q_e) (m_e c^2) r^2 LN \quad (9)$$

Substituting the values,  $q_e = 4.8 \times 10^{-10}$  CGSE units,

$$m_e = 9 \times 10^{-28} \text{ gram}, c = 3 \times 10^{10}$$

$$\text{cm/sec in (9),}$$

$$E = (1.98) \pi r^2 LN 10^{-5} \text{ KW sec.} \quad (10)$$

The electric charge energy developed

in any rotating body due to space rotation within the body is given by (10) If the body in rotation is an electrical conductor (iron, copper) then the orbital electrons of the atoms are liberated and will move under the action of a magnetic field to form electrical polarities [1].

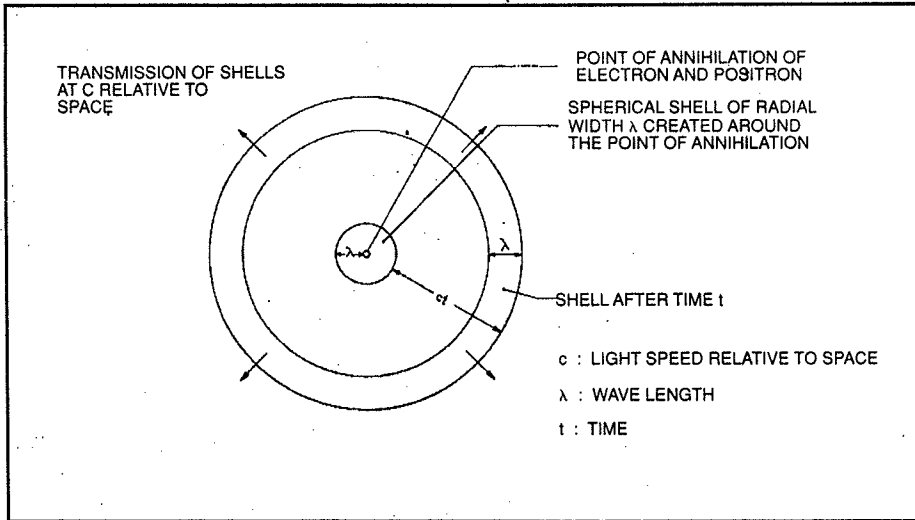
## Einstein's Postulate on Light Velocity

As discussed above, the creation of electron with its central void in a vortex of space is made possible with the supposition of a maximum limiting flow of space at light speed. Though Einstein in Special Theory of Relativity (STR) did not assign a velocity vector to a space point and confined the treatment of motion of bodies in an 'empty space,' his conclusion that "velocities higher than that of light have no possibility of existence," has been postulated in SVT and applied to have a physical effect in the breakdown of rotational flow of space and thus formulation of a theory of creation of fundamental matter has become possible. However, major departure from STR with regard to light velocity is that in SVT, light velocity is with respect to fluid space medium whereas in STR light velocity is relative to an observer or source of light. That measure of light velocity is a constant,  $c$ , for all observers and is independent of the velocity of its source as postulated by Einstein in STR is also, as will be seen below, supported by SVT.

## Fundamental Nature of Light

The phenomena of diffraction and interference of light require that "process of transmission of energy as a wave-motion in absolute vacuum or space" be defined as light. The photo-electric and similar other effects however necessitate that light be produced and also transmitted in definite and discrete "quantas" of energy. It is also recognized that light behaves in a phenomenon either as wave-motion or as stream of discrete energy quantas (photons), and not both at the same time. Different from either wave-motion or particle-behavior and yet combining the essential features of both the wave

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**Figure 3. Spherical Shell of Light**

and photons, is "shell" nature of light produced following annihilation of electron and positron (Fig. 3) as described below:

### Light Shell

The photon is here defined as a spherical shell of energy of radial width equal to its wave length ( $\lambda$ ) as shown in Fig. 3. The shell with a wave-front expands spherically at a constant "radial width" or wave-length. The energy of the shell is  $hf$ , where  $h$  is plank's constant, and  $f$  is the frequency of the light shell. The amount of light-shell's energy,  $hf$ , is contained within the shell at the time of its creation around the point of annihilation and remains constant during the transmission of the shell without any dissipation. The frequency  $f$  is defined as the "inverse of time taken in the transmission of the wave-front of the shell radially across the wave-length at speed  $c$  relative to space." Also, if the source of light produces shells in succession with no time gap between a shell's tail and its preceding shell's front, as shown in Fig. 4, the number of light-shells within a spatial length covered by light in unit time will also be equal to the frequency  $f$ . The relationship between  $f$  and  $c$  will be given by

$$c = \lambda f \quad (11)$$

### Velocity of Light Relative to Space is Universal Constant

With shell-nature of light defined above, it is shown below that observers in any inertial frame of reference will find the value of light speed relative to space to be the same.

An observer A (Fig. 4) is stationary relative to a source of light (L) and also relative to space. The source produces a train of light-shells continuously. The time of formation of each shell is

$$\Delta t = \lambda / c \quad (12)$$

Let the observer B now move with an uniform velocity  $V$  relative to space towards L. The wave-front of each light-shell is transmitted at  $c$  relative to space towards B who is approaching each shell and traversing its wave-length at velocity  $V$ . The time during which B traverses each shell radially along its wave-length is

$$\Delta t_m = \lambda / (c + V) \quad (13)$$

Time taken for B to traverse  $f$  shells will be

$$f [ \lambda / (c + V) ] = (c / \lambda) [ \lambda / (c + V) ] = c / (c + V) \quad (14)$$

Time left with B out of unit time after traversing  $f$  shells

$$1 - c / (c + V) = V / (c + V) \quad (15)$$

Additional shells traversed by B in the remaining time, from (15) and (14)

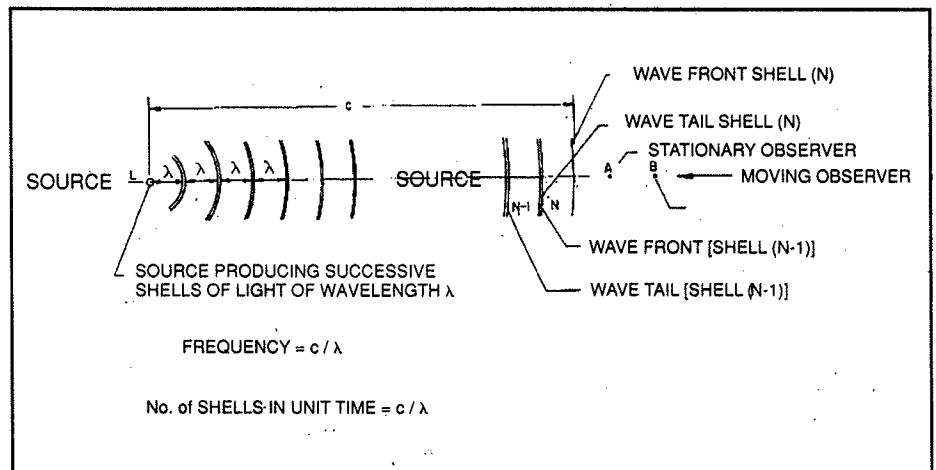
$$V (c + V) / \lambda / (c + V) = V / \lambda \quad (16)$$

Total shells traversed by B during unit time will now be

$$f_B = f + (V / \lambda) = (c / \lambda) + (V / \lambda) = \frac{c + V}{\lambda} \quad (17)$$

which, in fact, is the frequency of shells as per B. Wave-length of each shell as observed by B

$$\lambda_B = \lambda - \lambda V / (c + V) = \lambda c / (c + V) \quad (18)$$



**Figure 4. Successive Shells of Light**

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From (17) and (18), speed of light as observed by:

Speed = frequency x wave-length

$$\frac{c + V}{\lambda} \frac{\lambda c}{c + V} = c \quad (19)$$

which is the same as observed by A who is stationary relative to space.

The decrease in wave-length of light is seen to be in the same ratio as the increase in frequency for the moving observer. It can be shown that a similar result is also obtained when the observer moves in the same direction as the light shells.

In Special Theory of Relativity (STR) Einstein postulated that observers in different inertial systems will measure the same value of  $c$  in absolute vacuum, where  $c$  is not in respect of space substratum. Whereas, Light with shell-nature, STR's postulates on invariance of light speed for all inertial systems is vindicated when speed is taken in respect of space.

Similarly, if space flows towards a fixed source of light and opposite to the direction of transmission of light, wave-length of light shells will be shortened and frequency increased proportionately, thus keeping the value,  $c$ , constant. It will thus be seen that relativistic contraction of lengths or dilation of time are not needed with "shell" nature of light and its transmission at  $c$  relative to space medium.

In Michelson - Morley experiment (Fig. 5) light shells transmitting from M to M' move against flow of ether (if there is an ether drift  $u$ ) and will therefore shorten in wave-length and increase proportionately in frequency. After reflection from M' just the reverse process of increase in wave-lengths and decrease in frequency to original value (at the start from M) will take place. Similarly

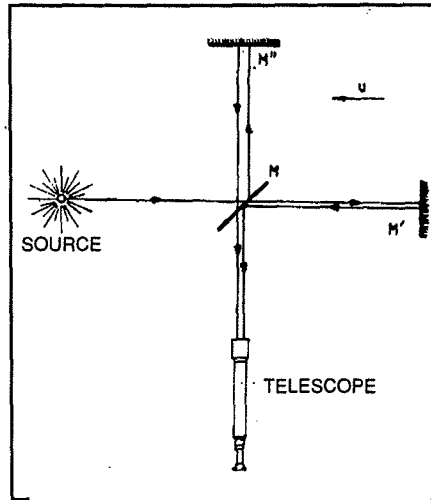


Figure 5.

for light transmission between M and M' due to light pulses tracing back their original course after reflection, any effect of changes in wave-length will be nullified. Therefore, even if there is an ether drift, the kind of experimental set up of Michelson - Morley with "shell" nature of light discussed above cannot detect the drift, if any.

The speed of light is to be measured across a single wave-length. An observer stationary with respect to space will measure different wave-lengths of the same light source when he starts

moving relative to space. The changes in wave-lengths for moving observer is in itself the proof that velocity of light relative to space follows Galilean relativity, though, as discussed above, due to discrete shells constituting light, measurement of light's speed by 'observers' in different inertial systems will appear to be the same.

## Space Power Generator

The basic principles and working of Space Power Generator (SPG) have been discussed earlier [3,4], and the results of these machines generating electrical power at 'over unity' efficiencies have been used to provide experimental proof to the real existence of static and dynamic states of space medium as postulated in SVT. The following discussions pertain to the latest test results of SPG which is presently under tests, and which generates 3.493 kiloamperes of d.c. current and 1.872 volt d.c. at 1800 rpm, with efficiency of 338 percent. Refer Table 1.

An electromagnet in rotation (Fig. 2) generates d.c. volts between its periphery and axis of rotation despite the fact that the core of the electromagnet and the magnetic field produced by it rotate together with no relative motion between the field and the conductor of the core. Stationary brushes and the neighboring conductors connecting the brushes placed at the axis of rotation

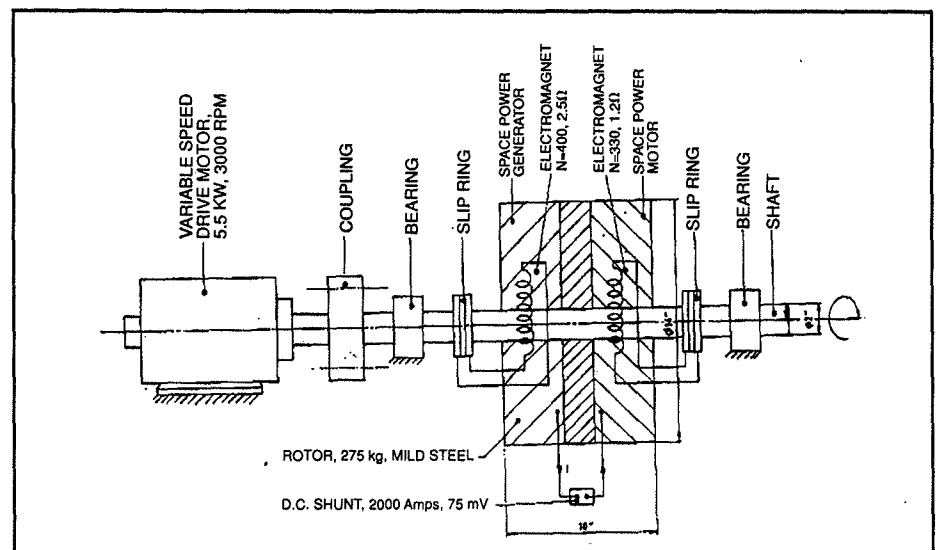


Figure 6. Space Power Generator



# Space Substratum

	I	II	III	
MAGNET POWER OUTPUT SWITCH	OFF OPEN	ON OPEN	ON CLOSED	
SPEED	1800	1800	1800	RPM
MAGNET POWER	0	1500	1500	WATTS
MOTOR ARMATURE POWER	5510		7840	WATTS
INCREMENT			2330	WATTS
MECHANICAL POWER INCREMENT TO SPG WITH 83% MOTOR EFFICIENCY			(2330 x 0.83) = 1933.9	WATTS
OUTPUT CURRENT	0	0	3493	AMPERES
GENERATED VOLTAGE	0	1.872		VOLTS
GENERATED POWER	0	0	6538.9	WATTS
EFFICIENCY			$\frac{(6538.9) \times 100}{1933.9} = 338\%$	

Note: SPG is driven by direct current 5.5 KW variable speed dc motor of 83% efficiency. The output from SPG is direct current in kiloamperes range at low dc voltage. Rotating weight of SPG is 275 Kg. which generates 3.3 volts dc when driven to 3000 rpm. The above tests are taken at less than rated speed due to limitation on driving motor capacity.

**Table 1. Space Power Generator Test**

and the periphery cut the leakage flux from the electromagnet. From many experimental tests following conclusions are drawn.

- The flow of current *within the rotating body* of the electromagnet does not produce any torque opposite to that of the drive motor.
- The flow of current in the stationary conductors connected to the brushes across the leakage flux causes an anti torque opposing the drive motor torque. The appropriate development of SPGs lies in a suitable design of the current collection system of the brushes, and their positions on the rotating electromagnet such that the anti-torque produced has the least possible value.

In Fig. 6, the SPG shown has two coils for the two electromagnets, one for the generator action and the other for motor action. Part of the electrical power generated in the SPG is converted to mechanical power in the Space Power Motor (SPM) thus reducing the drive-motor's input power. Details of a typical test result is shown in Table 1. The efficiency varies from 300 to 450 percent depending upon the excitation given to the SPM which converts parts of the SPG's power to mechanical torque.

## Conclusion

Einstein showed that matter contains an enormous quantity of energy given by mass-energy formula,  $E = mc^2$ , which was experimentally proved in the phenomena of nuclear fusion and fission. The source of universal energy for the creation of cosmic matter however remains unknown due to nonrecognition of reality of space. The phenomenon of space power generation provides an experimental proof to the fact that the medium of space in dynamic state of rotation produces energy for electric charge and therefore the underlying reality which generates the cosmic matter or which itself becomes the cosmic matter is the dynamic substratum of space. The significance of (light speed) appearing in mass-energy equation is that space medium rotates at light speed in the structure of the fundamental particle of matter. The universe consists of only one real entity, and that is space in various states of rotation.

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**"If we all worked on the assumption that what is accepted as true really is true, there would be little hope of advance."**

**- Orville Wright**

# ELECTROMAGNETIC INDUCTION OF SPACE SUBSTRATUM

by  
Paramahansa Tewari

*In order to fully comprehend the working of Space Power Generators that operate at over-unity efficiencies and thereby defy the existing Law of Conservation of Charge and Law of Conservation of Energy, I had carried out a number of crucial tests. The enclosed article describes one such test that pin-points the substantiality of Space (Absolute Vacuum). In due course I shall be writing some more articles also that are based on the experiments carried out for the development of Space Power Generators.*

## INTRODUCTION

A cylindrical electromagnet, rotated on its axis, develops dc voltage between the axis and the periphery though there is no relative motion between the magnetic field in the core parallel to the axis and the iron conductor of the core. Refer to Fig. 1. Faraday had discovered<sup>1</sup> this effect by rotating together a permanent magnet and copper disc integral with it. Bruce DePalma<sup>2</sup> while carrying out the experiments on rotation of magnets independently discovered this phenomenon and named it "N-Effect". Development of N-generator by DePalma, Homopolar generator by Adam Trombly<sup>3</sup> and Space Power Generator (SPG) by the writer operating at "over-unity" efficiencies and in violation of the "Law of Conservation of Energy" in its existing form is based on this new system of co-rotating assembly of magnet and disc conductor, in which the magnetic field and the conductor have zero relative motion. It gets evident that there are more basic aspects to Faraday's law of electromagnetic induction that what has been so far recognised.

In Fig. 2 a conductor C is placed transverse to a magnetic field B from a magnet M. Electromotive force (emf) is generated in C if it is moved as shown in the figure. Also if C is kept at rest and M is moved, emf is generated in C. In an other case, if current is changed in a nearby conductor C', the changing magnetic flux of C' will induce an emf in C. In the above cases, there is either relative motion between C and B, and B thus cuts the conductor or there is a change in the magnetic field B' of the nearby circuit conductor C' and the changing field B' interacts with C to produce emf. In SPG also the magnetic field is in

contact with the rotating iron core conductor and emf is produced without relative motion between the conductor and the magnetic field. The common feature in all the above cases is that for the generation of emf in a conductor, interaction with the conductor of either steady magnetic field of changing magnetic field is essential.

An experiment with rotating electromagnet described below has, however, shown that emf can be induced within a rotating conductor even when it has no direct interaction with steady of changing magnetic field. With this experiment, a conclusive proof is had that the absolute vacuum (space) is the fundamental substratum of reality that can undergo magnetic induction and transmit the emf induced in it to the conductor rotating relative to it.

## EXPERIMENT

Refer to Fig. 1. The magnetic circuit of a rotating electromagnet completes its path through static iron limbs on either side and the base. In the four slots cut in the cylindrical iron core, provision is made for non-magnetic stainless steel (ss) rods that are welded near the centre of the core and connected with the non-magnetic ss ring surrounding the core. The magnetic field produced by the dc current in the coil, which is integral with the core and rotates with it, does not pass through either the four slots or the rods mounted within the slots. When the assembly is rotated, the magnetic field remains fully confined to the core, air gaps on either side of the core and the base. Measurements show however that the ss ring develops the same dc voltage as the cylindrical core's surface on its periphery (Although the ss ring and the rods are neither in contact with the periphery of the core nor have magnetic field in them. Even when four thin slots are cut in the ss ring making rods independent, the same voltage is induced in the ring. It is inferred that the zone in which voltage is induced in the rods is within the slots and since the magnetic field in the core surrounding the slots is a steady field due to dc current in the electromagnet's coil, electromagnetic induction as conventionally understood cannot induce emf in the rods. The space surrounding the rods in the slots has to be a real medium that has to somehow generate emf in itself so

as to transmit the same to the rods.

## "STATIC" AND "DYNAMIC" SPACE SUBSTRATUM

The effect of generation of emf in above experiment can be explained by introducing "static" and "dynamic" aspects space substratum as discussed elsewhere writer's works.<sup>4</sup> The interatomic space within the iron core along with the "space vortices" that constitute the atoms of the iron core, ss ring and the rods form one system dynamic space that rotates relative to static space. Within the iron core, however, the rotating space is super-imposed on stationary space, and, therefore, the magnetic field there is common to both the rotating as well as the stationary spaces. As the space the rotating iron due to rotation shifts along with its magnetic field, it leaves behind within the slots static space with magnetic field going to zero there. This causes induction of emf in the static space of the slots. The ss ring moving through the stationary space within the slots pick up the emf induced there and thus raised to the same potential as the periphery of the core. If the space medium within the slots around the ss rods is considered "emptiness", in the absence of any magnetic field there, no electro-magnetic induction is possible and hence the ss ring cannot develop emf with steady magnetic field in the contrary to experimental evidence.

## CONCLUSION

The following conclusion are drawn from the above experiment.

A rotating electromagnet carried with it during rotation the magnetic field in its atomic space of the core produced due to coil integrally mounted on the core of electromagnet. (As the source of the magnetic field [coil] rotates, the field also rotates with the source.)

The steady magnetic field in the iron core in its transverse motion of rotation produces emf in the neighbouring space (within the slots) due to the electromagnetic induction in space caused when the magnetic field in the core shifts relative to the stationary substratum in the slots.

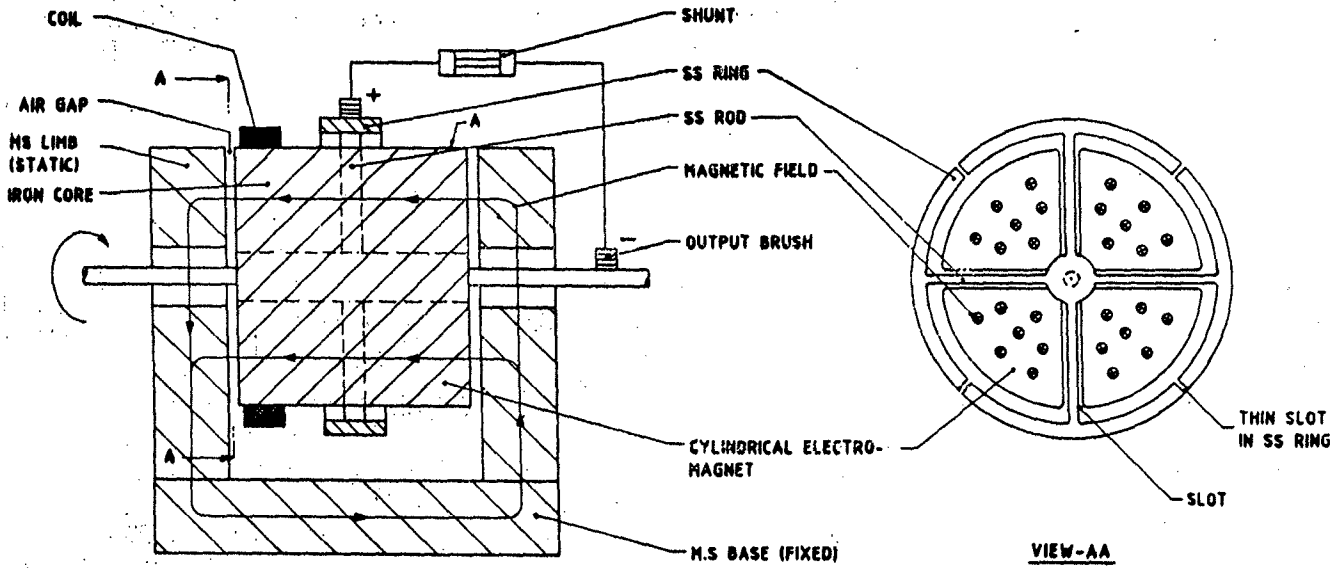
The radial flow of load current in the electromagnet's iron core and the magnetic field in the core transverse to this current interact within the rotating space system of the core which is independent of the existing stationary space system. The resultant interaction between the current and the magnetic field is thus contained within the rotating space system and does not produce torque opposite that of the prime mover that rotates the electromagnet.

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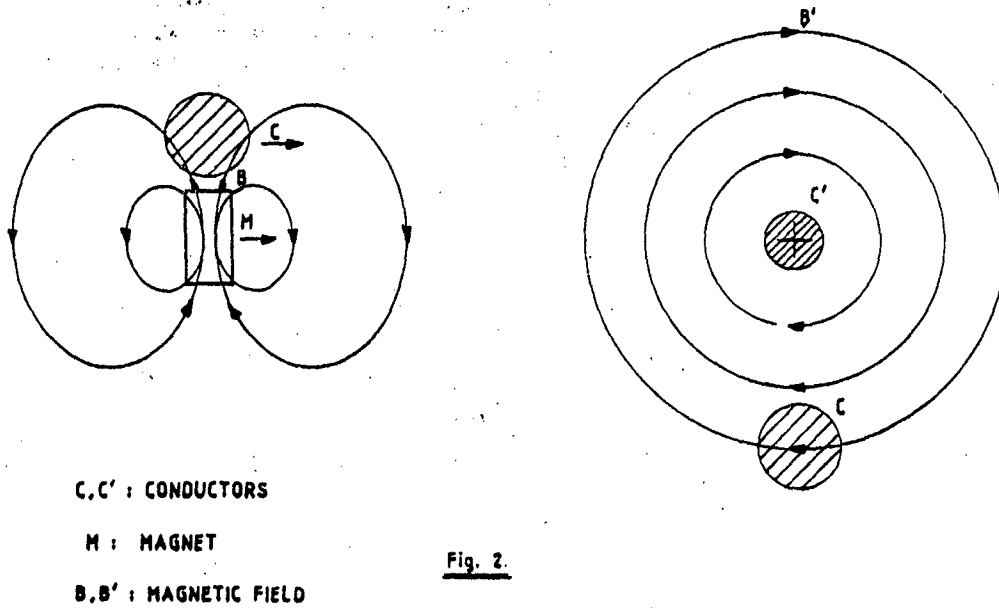
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 2. Bruce DePalma, On the Possibility of Extraction of Electrical Energy Directly from Space.  
 3. Adam D. Trombly, Director of Research & Development, Zero Point Technologies Inc.,

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 4. Paramahansa Tewari, Beyond Matter, Aligarh, India: Print Well Publications, 1984.  
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6. Paramahansa Tewari, Violation of Conservation of Charge in Space Power Generation Phenomenon. *The Journal of Borderland Research*, USA, Vol. XVI, No. 5, Sept.-Oct. 1989.  
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**Fig. 1**



**Fig. 2.**

shows inertness. The living beings are the intermediate evolutionary stages between the inert matter and pure akasha with gradations of consciousness in each species. There are even gradation of consciousness in different limbs of the same living being. The attribute of 'Bliss' of akasha from its highest state in pure akasha is graded and diluted down to all the material manifestations and appears as its lowest state as sensual pleasures in the living beings.

The underlying unity can be seen only at the most fundamental state of the universe, to which the current science of matter and field has not yet reached; however, some glimpses of the unity are evident at each evolutionary stage of Nature. The common features in Nature's different patterns of design inherent in the plant and animal world, the distribution of consciousness in each living entity, the existence of the senses and the reproductive systems in the animate of all kind, the perpetual change encompassing everything, and the similarity of basic relationships and equations of different physical phenomena, are indicative of the 'Underlying Unity'.

field in which rigid boundaries between categories of thought eventually smudge and melt away? Might not the concept of unity in the universe eventually turn, reflectively, to the mind which gave it birth, subsuming all the products of that mind, all its divisions of thought and experience?

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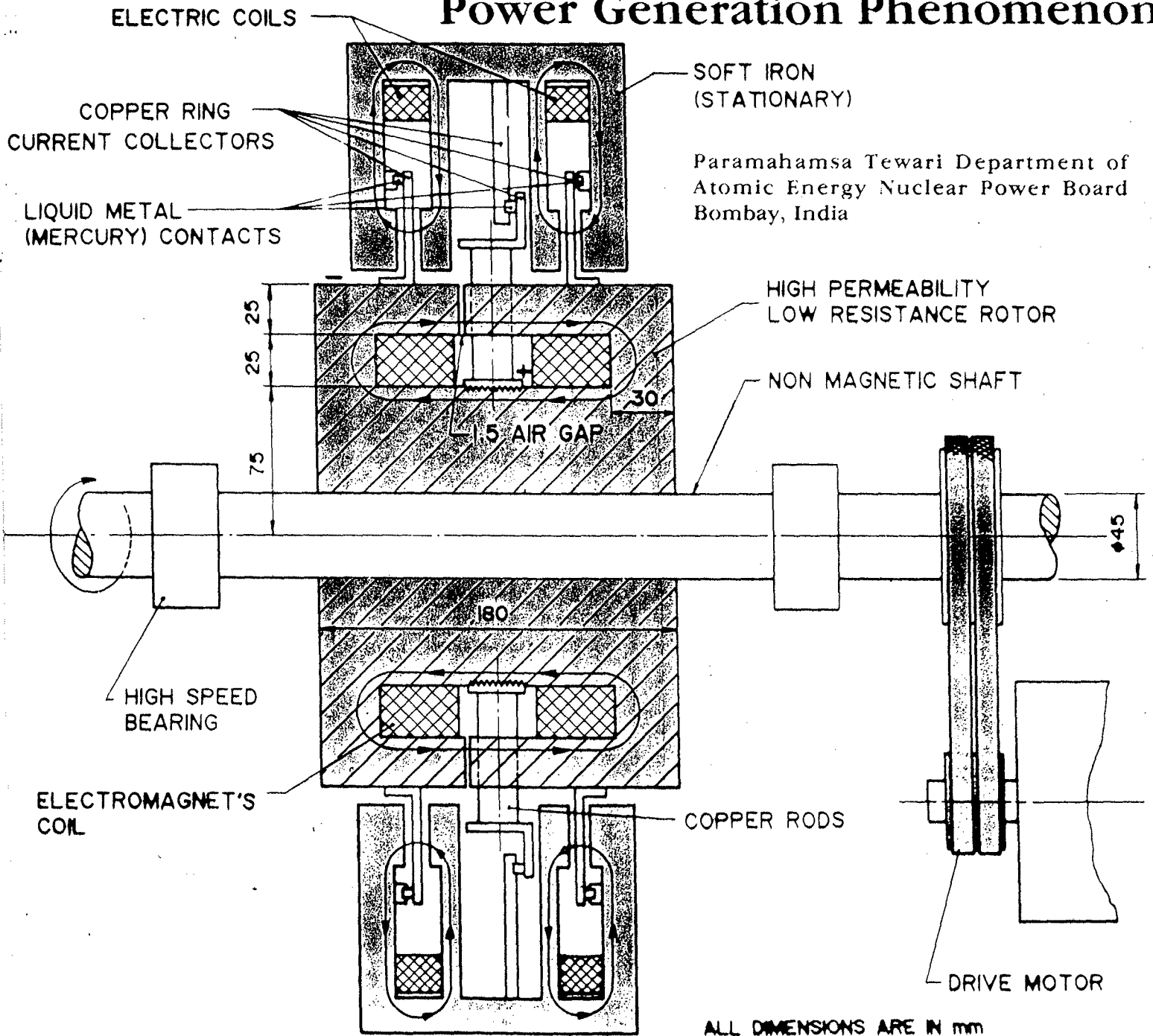
(EDITOR'S NOTE) Paramahansa Tewari was born on January 6, 1937. He received B.Sc. Engineering (Electrical) degree from Banaras Engineering College, Banaras Hindu University, India, in 1958.

After working initially in Bhilai Steel Project on electrical installations, he joined Department of Atomic Energy and worked at Plutonium Plant on electrical works. For one year he was deputed to Douglas Point Nuclear Generating Station (1964-65) for training in field engineering and installation of electrical equipment in Nuclear Power Projects. He worked as Erection Superintendent (Electrical) at Rajasthan Atomic Power Project, Deputy Chief Engineer at Narora Atomic Power Project, Chief of Transmission in National Thermal Power Corporation, India, and presently is Head, Quality Assurance, 500 MWe Group, Nuclear Power Board, Department of Atomic Energy.

He has authored works on electron structure with space dynamics.

For the presentation of a working model of Space Power Generator in an International Congress of Gravity Field Energy held at Hannover, West Germany in March 1987, and lecture on the new principles of Space Vortex Theory, he was awarded First Prize.

# Interaction of Electron and Magnetic Field in Space Power Generation Phenomenon



Paramahansa Tewari Department of Atomic Energy Nuclear Power Board Bombay, India

**SPACE POWER PERPETUAL MACHINE**

FIGURE - 5

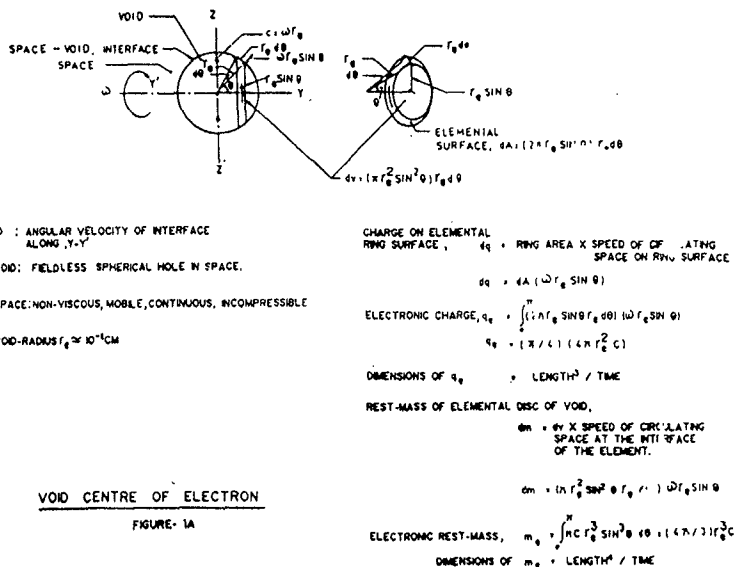
## INTRODUCTION

The newly discovered phenomenon of Space Power Generation as discussed in "Generation of Electrical Power from Absolute Vacuum by High Speed Rotation of Conducting Magnetic Cylinder" [1] has the following distinctive features that pin point the fact that absolute vacuum in dynamic state is the fundamental state of positive energy.

○ The electrical output power from the Space Power Generator (SPG) shown in Fig. 1B, and Fig. 1C does not reflect in the proportionate increase of the electrical input to the drive motor for the SPG, while the excitation power to the electromagnet remains substantially constant when the machine is run from no-load to the loaded condition.

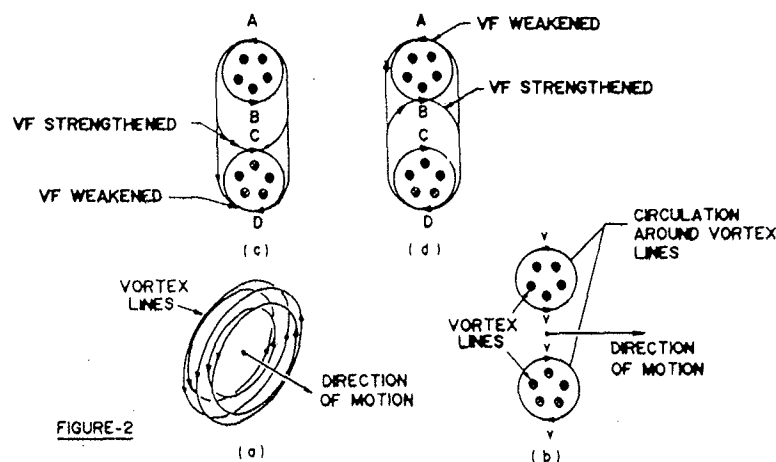
○ The interaction of electrons that constitute the electrical output current with the magnetic field in the rotating iron rotor of the SPG is such that the effect described above takes place.

The mechanism of generation of continuous electrical power in the inter-atomic space (absolute vacuum) of the iron rotor was analyzed in the paper referred above with the use of the fundamental equations of Space Vortex Theory (SVT) which postulate non-viscous nature of space (Fig. 1A). Further tests on a SPG have revealed that it is the rotation of space within the rotor along with the source of magnetic field in it which shows "reduced anti-torque" or "dragless" feature unlike the conventional generators. The paper discusses the fundamental physics of interaction of electrons with the magnetic field with the void vortex structure [2] of electron as given in SVT, (Fig. 1A) and some crucial experimental results that describe the unique behavior of the machines in space power generation phenomenon.

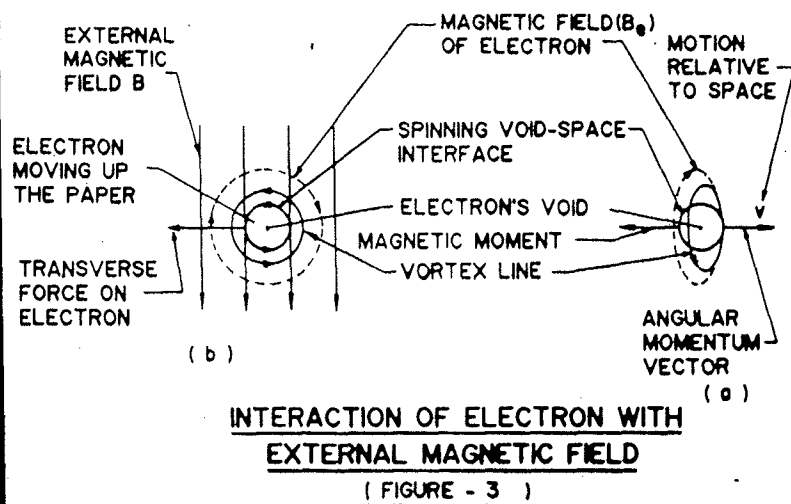


## Generation of magnetic field by electron's motion relative to Space.

In Fig. 2 a vortex ring is shown to have a preferred direction of motion [3] due to circulation around the vortex lines as shown in Fig. 2b. If the circulation around the top of the ring (Fig. 2c) is extended to the bottom of the ring, there will be decrease of VF at D, and increase at C. similarly if the circulation from the bottom of the ring (Fig. 2d), is extended to the top of the ring, VF will decrease at A, and increase at B. The vortex ring therefore moves along the direction of its motion. On similar reasonings it is concluded that the electron vortex (Fig. 3a) will have a specific direction of motion along the positive direction of angular momentum vector.



The magnetic effect is discussed [2] and shown to be a reaction from space against the change in the magnitude of VF in the vortex of the electron when it is set in motion relative to space. The clockwise spin of VF in the vortex of electron produces anti-clock wise concentric circles of magnetic field in an electron moving relative to space as shown in Fig. 3a.



**Magnetic-coupling between the two volumes of space within and outside the rotor.**

In Fig. 4, the interatomic space within the rotor of the SPG is shown under rotation. Since the electromagnet are mounted rigidly with the rotor, the magnetic field lines (fig. 4b) shown confined within the rotor, also rotate with the rotor's space, there being no relative motion between B and the rotor's space. The rotation of the rotor produces an irrotational vortex and VF within the rotor. The VF of the irrotational vortex interacts with the atomic vortices and releases conduction electrons from the iron atoms [1], a free electron is imparted velocity  $v$  along a VF vector (Fig. 4a) and thus moving relative to the rotor's space produce magnetic field  $B_c$  as shown in Fig. 3a. the interaction of B and  $B_c$  (fig. 3b) deflects the released electrons towards the center (fig. 4a) under a radial force ( $B \times v$ ) creating a dc voltage between the center and the periphery of the rotor.

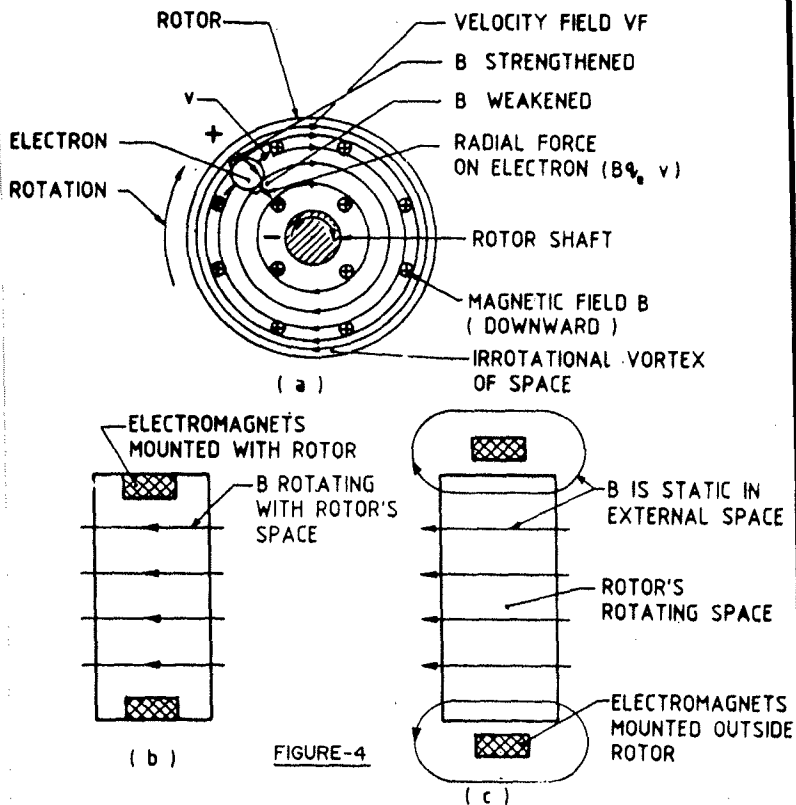


FIGURE-4

The load current drawn from the rotor sets up a magnetic field within the rotor body due to its electrons (Fig 3b) that interacts with B. The force produced on each electron in the current results in a reaction on B and the source of B, i.e. the electromagnets that are rotating with the rotor's space relative to which B is stationary. The reaction from the electrons of the current is thus taken by the rotating space of the rotor, and kept confined within it without transmission to the external static space.

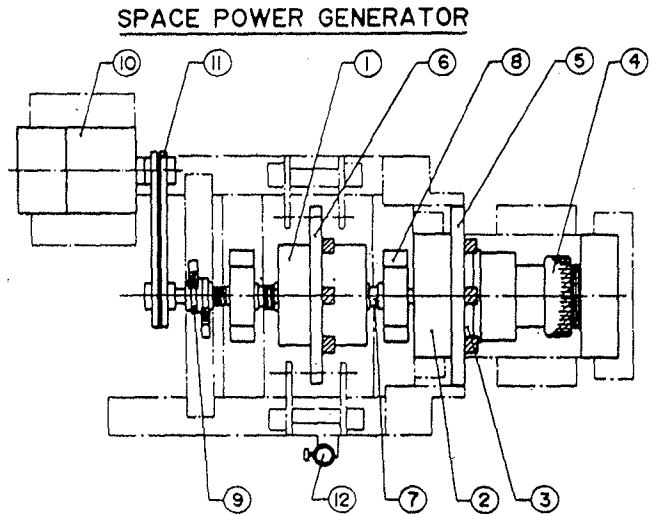
In Fig. 4c, the electromagnets are separately mounted due to which B has relative motion with

respect to the rotor's space. The external space outside the rotor is now couple through the magnetic field B with the rotor's rotating space. The force experience by the electrons of the current reacts on B, and on the external space in which the source of B is located. There is a force now through B on the electrons in the rotor's rotating space in a direction opposite to the rotation and thereby creating an "anti-torque" or "drag" in direct proportion to the output power.

The "dragless" feature of the SPG is thus seen to be due to the electro-magnet's rotation with the rotor.

**Tests on SPG**

The SPG shown in Fig. 1B and Fig. 1C, was tested for incremental power ratio. Tests were taken at a low speed of 2000 rpm since the brushed caused vibration on higher speeds giving improper contacts. The voltage build-up was however checked at higher speed of 4325 rpm, when 1440 mv was observed between the inner rotor surface and the shaft. The dc current input to the electromagnets mounted in the rotor remained constant from the no-load to the loaded condition of the SPG. The rise in the ac input power to the drive motor, from the no-load input and corresponding to the various dc electrical outputs was recorded.



- ① SPACE POWER GENERATOR (M.S. ROTORS 8.125" O.D. 3.5" LONG EACH, 5.5" ROTOR I.D.)
- ② IRON CORE OF FARADAY MOTOR
- ③ DISC ROTOR (FARADAY MOTOR)
- ④ ELECTROMAGNET (FARADAY MOTOR)
- ⑤ FARADAY MOTOR BRUSH GEAR
- ⑥ BRUSH GEAR OF SPG
- ⑦ 42mm BRONZE SHAFT
- ⑧ BEARING
- ⑨ SLIPRINGS
- ⑩ DRIVE MOTOR
- ⑪ DRIVE BELTS
- ⑫ MERCURY POT FOR CURRENT COLLECTION SYSTEM

FIGURE - 1B

On the same shaft as the SPG, a Faraday disc motor (FM) was mounted with stationary electromagnets (Fig. 1B). As the output dc current from the SPG passed through the disc of the FM, due to the torque

developed the rise in the ac input power to the drive motor was seen to reduce proportionately. The incremental power ratio was higher (about 7.26) with the FM mounted with the SPG, than the results obtain with the SPG alone (about 1.75 to 2.5).

For all the above tests, an airgap in the outer rotor flux path of the SPG was maintained. An interesting phenomenon was noticed in which the dc voltage between the outer rotor-surface and the shaft reduced to zero when the airgap was closed and an electrical continuity existed between the outer two halves of the rotor surfaces. The following is the likely explanation:

Consider the voltage build-up at the two halves of the outer rotor surface A in Fig. 1C. The electrons that become free due to rotation of the rotor are pushed radially out due to the interaction with the magnetic field from the surfaces A' towards the surfaces A, thus making A negative relative to A' and also B. (The electrons are pushed radially down from B towards the shaft). Due to the airgap in the outer rotor, the electrons accumulated at surfaces A do not find return paths to A (sy29, and therefore voltages are maintained there. If the two halves of the outer rotors are brought together by eliminating the airgap, the electrons at either of the surfaces A will find return paths to A'

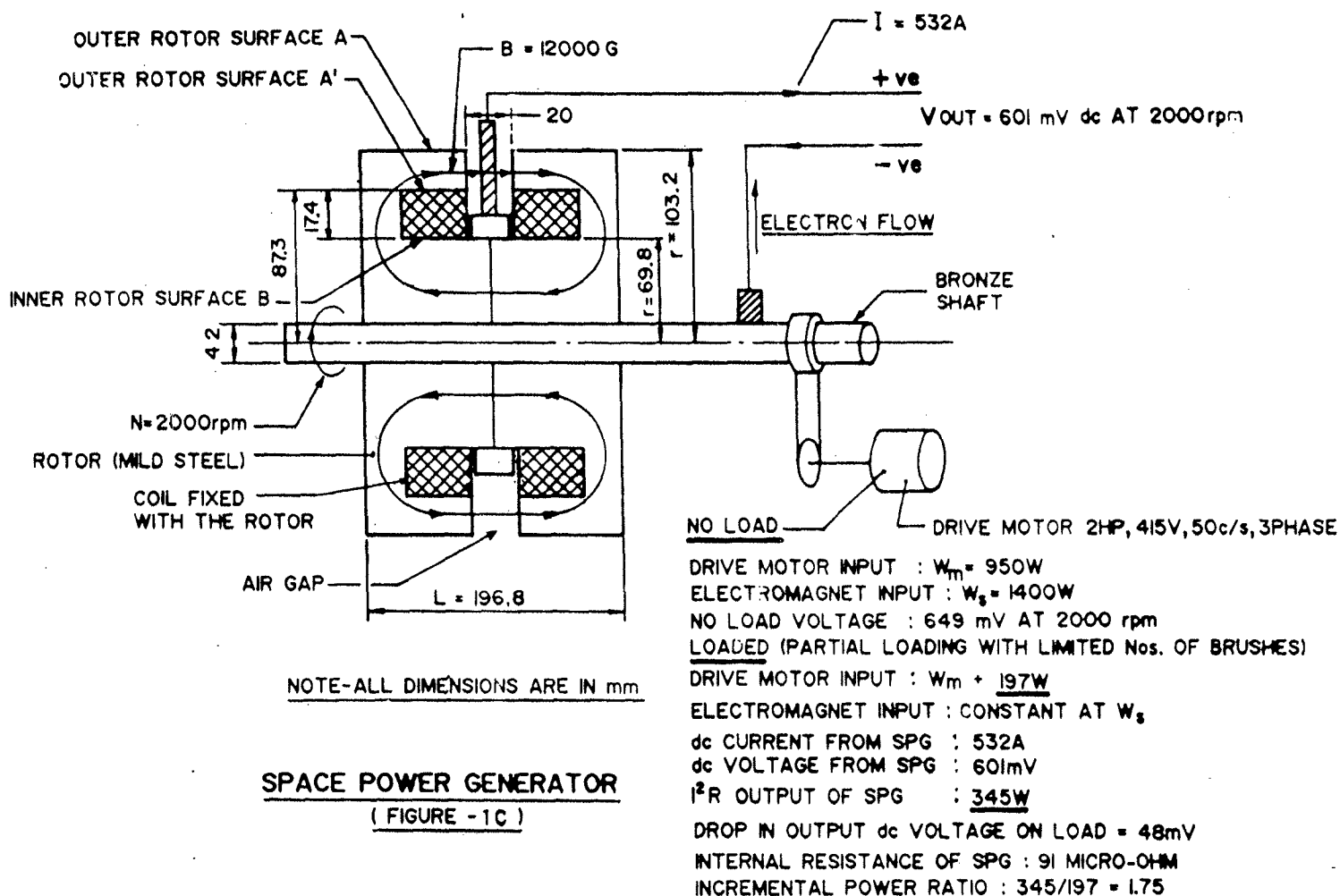
through the other half of the outer rotor. The following pattern of flow of electrons will be established.

- Conduction electrons from surface A from either half of the rotor will flow through the other half to surfaces A'.
- Free electrons from surfaces A' will travel towards surfaces A due to magnetic interaction.

Since the above two modes of electron flow are opposite in direction, the voltage build-up at the surfaces A cannot take place. It can similarly be shown that the electrons pushed towards the shaft from the surface B, will find return paths through the outer rotor surfaces A thereby preventing any voltage build-up at B. The voltage between A and the shaft will be the difference of the voltages between B and shaft, and A and B. In the absence of voltage build-up at A and B, as discussed above, the voltage between A and the shaft will reduce to zero as experimentally observed.

### Space Power Perpetual Machine

It should be possible to feed the electrical power generated in the inner core of the SPG through liquid metal contact brushes and rotating copper rings mounted on either half of the outer rotor of the SPG





(Fig. 5) and into the outer rotor surfaces and develop torque in a Space Power Perpetual Machine (SPPM). The fixed electromagnets provide magnetic field for motor action that produces torque in the direction of rotation of the SPPM. The reduced airgap will decrease the power requirement to the electromagnets appreciably. Also, the penetration of the nonmagnetic copper rods into the outer iron flux return paths and electrically insulated from it, should reduce drag on the SPPM considerably, compared to the drag on N-generators without the modification suggested above. The tests on SPPM are yet to be taken.

## CONCLUSION

The explanation to the phenomenon of space power generation in which there are positive experimental proofs of energy being produced from the absolute vacuum (space), can not be given by the current laws of physics because it does not recognize that rotation of vacuum is a real process that can generate energy.

The interaction of electron and magnetic field discussed above as per the principles of SVT though exceeding the present boundary of physics yet provides explanations to the experimental findings.

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## ACKNOWLEDGMENTS

The exchange of Technical letters with Mr. Bruce De Palma, De Palma Energy Corporation, 1060 Channel Drive, Santa Barbara, California 93108, (805) 969-6442. Have very much helped in the development of the SPPM from the basic concepts of N-Generator.

## ANOTHER SUPPLIER BOUGHT UP BY THOMAS & SKINNER, INC.

We at Thomas & skinner are pleased to inform you that we have acquired the cast and sintered Alnico product lines of IG Technologies, Inc., effective 11 November 1987. This purchase includes the assets of order backlog, tooling, technical data and know how,

manufacturing and engineering drawings and specifications; as well as the equipment necessary to increase our capacity to meet all of our customers' needs.

To assure an orderly transition of production capability, we will continue to manufacture the cast and sintered Alnico for IG's former customers at their Valparaiso facility while we prepare our plant and move equipment to Indianapolis. We expect to complete this production integration during the next few months.

As most of you know, T & S has been a full line supplier of cast Alnico materials for many years, with involvement in magnet production since 1901. We were instrumental in the development of high coercive Alnico 8 and high energy Alnico 9, and continue to be the recognized world leader in quality Alnico permanent magnets.

At Thomas & Skinner, customer service is our highest priority. This emphasis will continue as we effect the transfer of IG's Alnico business to Indianapolis. If you have any questions, or suggestions, please contact Vernon A. Detlef, Sales & Marketing Manager. We look forward to being your quality, responsive, magnet supplier.

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## NEW HEAVY-DUTY VIBRATORY FEEDER RATED AT 700 TPH

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A standard 48" x 72", 36" x 96", or 42" x 84" open flat tray is available with the unit. Special size trays are also available. The Model 115B can be designed to be either suspended from rods or cables, or furnished with a floor mounting. Drive can be either below deck or overhead. All units are enclosed — dirt and moisture resistant. Patented electro-permanent magnetic drive requires no rectifiers, has low power consumption and is operated by a simple variable transformer-type control. Feed rate is very linear through the entire control range.

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# ROTATION OF MAGNETIC FIELD OF A ROTATING MAGNET

PARAMAHAMSA TEWARI

## INTRODUCTION

Faraday performed experiments in 1832 by rotating a copper disc close to a magnet (Fig. 1) and came to the final conclusion that in a system of rotating magnet, the magnetic field lines rotate with the magnet. As can be seen in fig. 1, whether the magnet and the disc conductor rotate together or not, voltage is induced as long as the conductor rotates. When the disc conductor rotates and the magnet is stationary, Faraday considered production of emf due to 'flux cutting' phenomenon. However, when the co-rotating assembly of the magnet-disc conductor, also showed generation of emf, Faraday believed that the magnetic flux remained fixed in space though the magnet rotated, and thereby the principle of 'flux cutting the conductor' could be retained. It is later on (1851) that Faraday concluded [1] on the rotation of the magnetic field lines along with the rotating magnet.

Other experimenters [1] who disagree with the above view of Faraday have based their findings to the detection of electromotive force (emf) with different configurations of rotating magnet and circuit conductors with and without relative motion between the magnet and the conductor (seat of emf generation) and have disproved "flux cutting" hypothesis for emf generation and thereby Faraday's ideas on rotation of magnetic field along with rotating magnets. Recent experiments on rotation of electromagnets with electric coil mounted integrally on the iron core, have revealed through decisive experiments that rotation of the magnetic field of a rotating magnet depends upon the nature of the magnetic path (external to the electromagnet's core) that the magnetic field lines take, and there are cases where a rotating magnet can either have its magnetic field rotating with it, or the field can be also fixed in space with the earth's frame of reference. In these experiments, the emf produced in a disc conductor co-rotating with the electromagnet is made to produce current through a stationary circuit, and the effect of the interaction of this current with the magnetic field that initially produced the emf in the rotating conductor is observed.

## FORCE ON A CURRENT CARRYING CONDUCTOR IN MAGNETIC FIELD

A current carrying conductor (fig. 2) ex-

periences a force in magnetic field (from magnets fixed in the earth's frame of reference) relative to which the conductor is free to move. The conductor C will produce magnetic field B due to its current, and the interaction between the fields B and BM will create a transverse force that pushes the conductor C as shown in the figure. In fig. 3, conductor D is rigidly fixed to earth's frame whereas the electromagnet is free to rotate. The flow of current through the airgap and the interaction of its magnetic field with the electromagnet's magnetic field in the airgap creates a torque on the electromagnet, the direction of the torque being in opposition to the drive motor's torque used to rotate the electromagnet. In the central iron core of the electromagnet where the source of the magnetic field, that is, the electric coil and the iron core have no relative motion, it is experimentally observed [2, 3, 4] that no torque is developed due to radial

current flow. Thus it is seen that generation of force and doing work with a current carrying conductor in an external magnetic field is possible if either the current carrying conductor, or the source of the external magnetic field is fixed with the earth's stationary frame so that relative motion between the conductor and the external magnetic field is made possible.

For the conductor C (fig. 2) to experience force and move relative to the magnets, the magnetic field BM should be in rigid connection with the fixed magnets. Also, for the development of an anti-torque in the rotating electromagnet (fig. 3) and transfer of the anti-torque to the drive motor, the magnetic field BA in the airgap must be fixed with the outer flux path of the electromagnet and should rotate with it so as to have relative motion with the fixed conductor D in which the force is first generated and its reaction transmitted to the electromagnet. From above discussions, following can be inferred:

- (i) A magnet fixed with the earth's frame has its magnetic field also fixed in space.
- (ii) A rotating magnet carries its magnetic field with it.
- (iii) For the development of force and

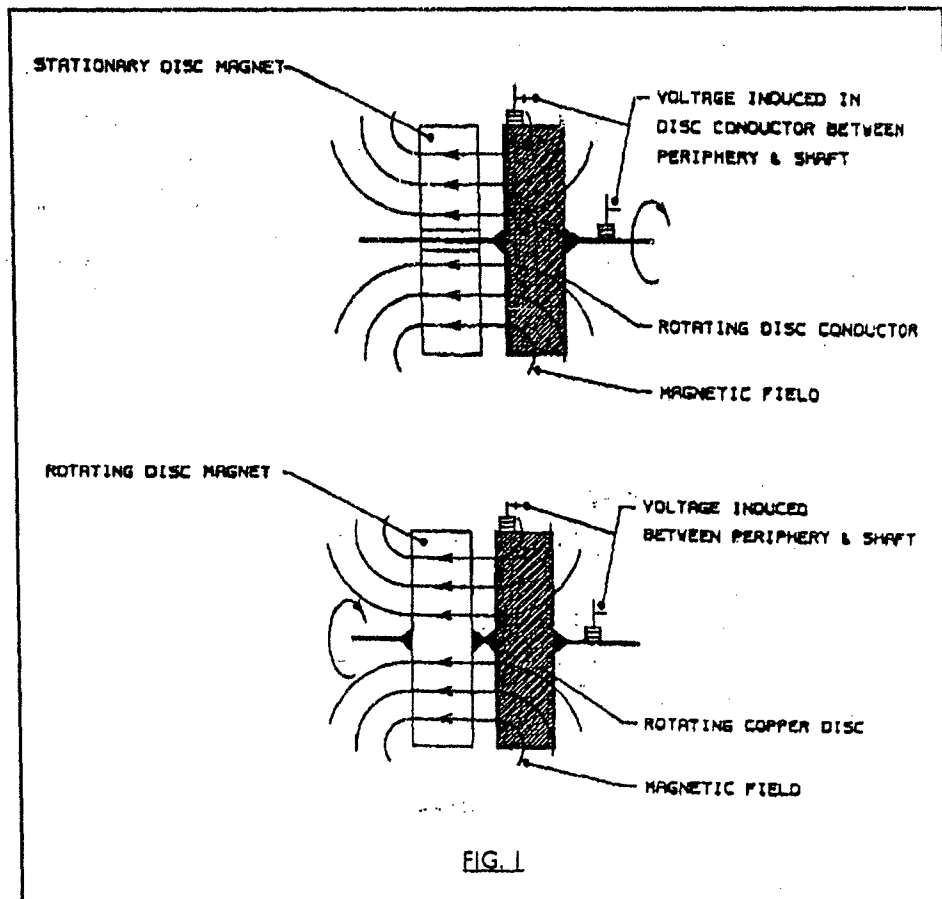
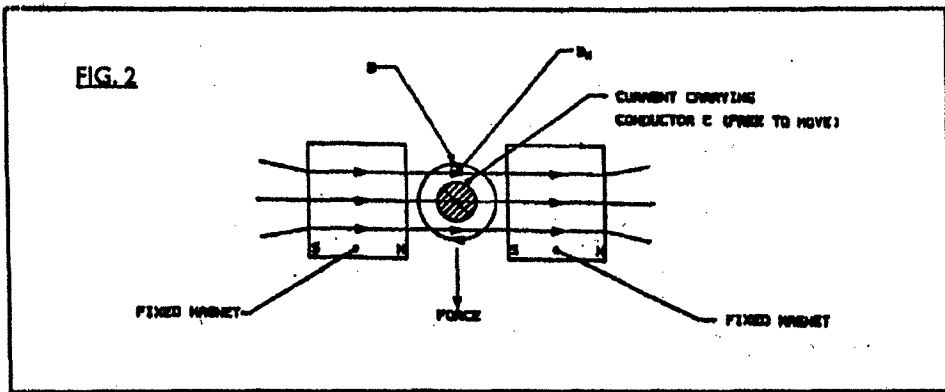


FIG. 1



work to be done between a current carrying conductor and the external magnetic field there should not be rigid connection between the source of the magnetic field and the current carrying conductor.

### DECISIVE EXPERIMENTS:

In contrast to the conclusion (ii) above a recent experiment by the writer described below has shown that there exists a specific case where a rotating electromagnet does not carry its magnetic field with it.

Refer fig. 4 The rotating cylindrical electromagnet through its magnetic field should experience an anti-torque due to the stationary Aluminium plate, which carries current produced by the voltage generated in the rotating electromagnet through the action of space power generation [2, 3], similar to the development of anti-torque in fig. 3. The basic difference in fig. 3 and fig. 4 is that the flux return path in the former is through rotating iron rings, whereas in the latter the flux returns through static iron yokes. Experiments reveal that the drive motor (fig. 4) does not see any anti-torque thereby clearly show-

ing that the magnetic field BS is stationary in space in the air gaps on either side of the fixed Aluminium plate, and therefore the magnetic field from the current in the Aluminium plate which is also fixed in space does not produce any anti-torque on the drive motor. That BS does not rotate with the electromagnet in this experiment is also supported by the fact that the efficiency of the power generated from the electromagnet, which in fact is similar to N-Generator/Space Power Generator, reduces considerably showing thereby that despite the fact that the electric coil and the iron core are co-rotating, the iron core conductor of the electromagnet possesses relative motion with respect to BS, as is the case of a conventional homopolar generator.

It is seen in fig. 4, that the external fixed yoke provides a magnetic path which is not axisymmetric with respect to the cylindrical electromagnet, and therefore the magnetic field is arrested from rotation. In case of the electromagnet in fig. 3, the external flux return path is axisymmetric and also rotates with the central core of the electromagnet, and therefore the magnetic field BA in the air gap,

also rotates with the electromagnet as concluded above. It is thus seen that the path of the magnetic field external to the rotating magnet determines whether the field of the magnet rotates with it or not.

### CONCLUSION

Considering the case of a cylindrical electromagnet in rotation, it is concluded that :

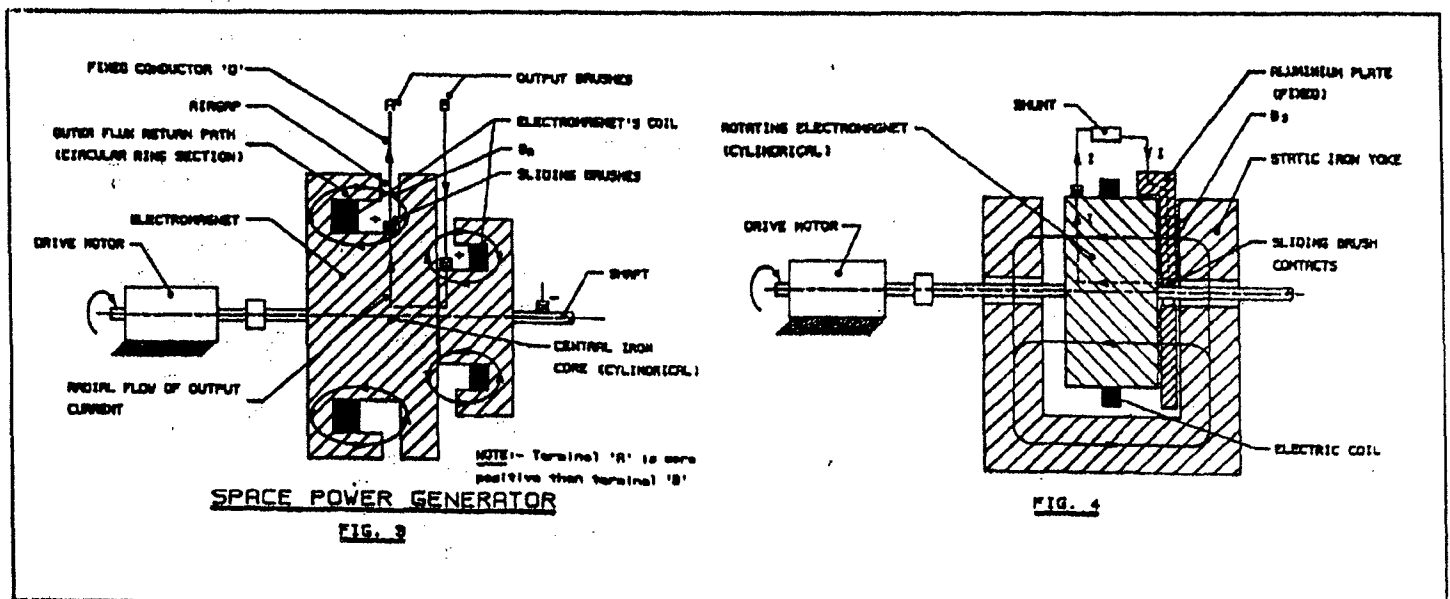
(i) the rotating magnet carries its field with it if the flux return path is through vacuum, air, or non-magnetic material;

(ii) the rotating magnet carries its field even if the flux return path is of magnetic material and stationary, provided it is axisymmetric;

(iii) the rotating magnet does not carry its field within its body or external to it if the flux return path is magnetic, stationary and not axisymmetric.

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- [4] Adam D. Trombly, Director of Research & Development, Zero Point Technologies Inc., PO Box 1031, Evergreen Colo 80439.



# **PROCEEDINGS OF ICSTA**

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## SPACE IS THE ABSOLUTE REALITY

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**Abstract.** Fundamental relationship, hitherto unknown, on mass, charge, dielectric constant of absolute vacuum and Planck's constant have been developed from a model on electron structure in which the absolute vacuum (space) spins at a limiting velocity and creates an ultras-small fieldless void concentric with the electron centre. The unity of the electrostatic, magnetic, gravity and electromagnetic fields is demonstrated by showing that the velocity-field, produced due to the spinning of the vacuum, is the most basic field that generates all other fields. The universal constants, like electronic charge ( $q_e$ ), electronic rest mass ( $m_e$ ) and Planck's constant ( $h$ ), have been reduced to only two universal constants - light velocity in absolute vacuum ( $c$ ) and the radius of the fieldless spherical void. The nature of mass and charge are qualitatively and quantitatively revealed through the most fundamental relationship emerging from the electron structure in which the sole reality is the space medium. Thus, the absoluteness of the universal space as the most basic and dynamic substratum of energy stands proved through a theoretical analysis.

### 1. INTRODUCTION

A unique theoretical approach to establish the absoluteness of space (absolute space or absolute vacuum, hereafter termed as space) is to develop a model of electron with the spin of space itself, and with no other medium or field in its structure except for the fields arising due to the spin of space. The figures 1.1a and 1.1b show the electron structure. The central core is a fieldless void, which is created, as discussed further, due to the limiting spin at the centre of an irrotational vortex of space postulated to be a fluid medium. Thus, with the sole basic medium of spinning space, if the model can explain the origin of the basic properties of electron, like rest mass, charge, electrostatic field ( $E$ ), gravitational field ( $g$ ), magnetic field ( $B$ ) of a moving electron, and other behaviour, like inertia property, annihilation of electron and positron, and the production of light following annihilation, the absoluteness of space as the only basic reality of the universe will be proved conclusively. With this approach, an insight into the fundamental phenomenon of creation of matter, the origin of fields and the nature of basic field that unifies all other fields, the fundamental entity of mass, the universal radius, and the cyclic nature of creation and annihilation of the universal matter is also gained.

#### 1.1 Postulates

The basic aim of this theory is to generate charge, mass and other properties exhibited by matter either due to its mass property (inertia, density), or discontinuous nature (compressibility, viscosity) from space itself. Hence, in the postulates below, the most

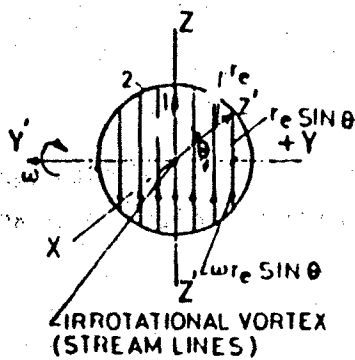


FIG. 1.1a

- 1 TANGENTIAL VELOCITY  $\omega r_e = c$
- 2 SPHERICAL INTERFACE
- 3 TANGENTIAL VELOCITY  $u = c r_e / r$
- 4 SPHERICAL VOID OF RADIUS  $r_e$
- 5 INWARD RADIAL ACCELERATION  $u^2 / r$
- 6 INWARD RADIAL ACCELERATION AT INTERFACE  $c^2 / r_e$

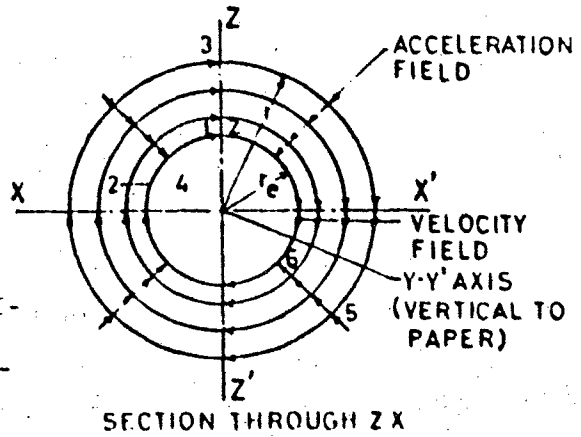
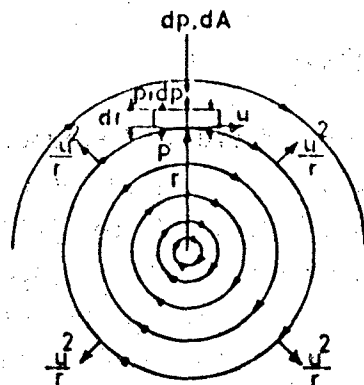


FIG. 1.1b

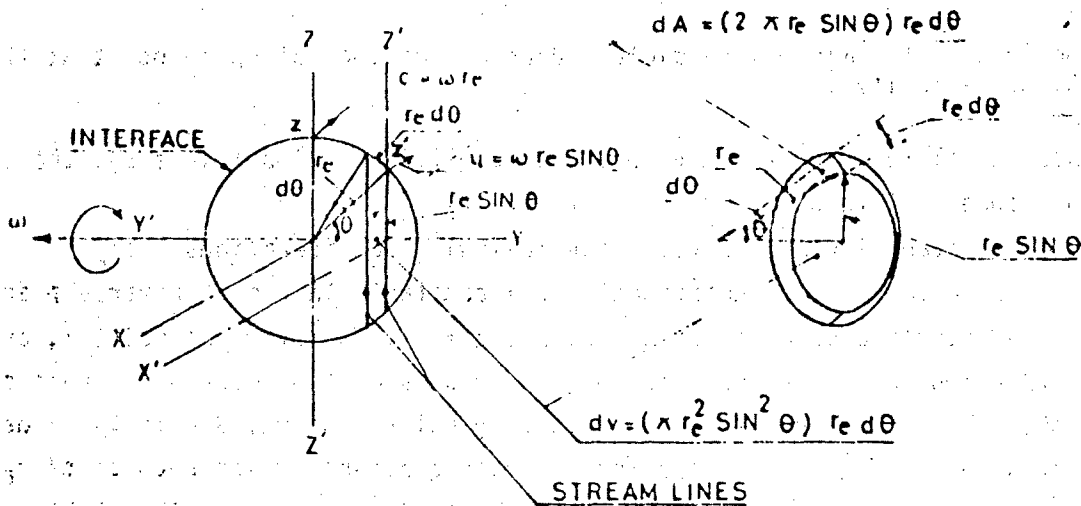
FIGURE 1.1a, 1.1b-ELECTRON STRUCTURE



$ur = \text{CONSTANT}$

$$\frac{\text{FORCE}}{\text{MASS}} = \frac{dp \, dA}{\rho \, dA \, dr} = \frac{u^2}{r}$$

FIGURE 1.2 IRROTATIONAL VORTEX



VELOCITY FIELD ON INTERFACE

FIGURE 1.3

fundamental state of space is hypothesised as a non-material medium, where "non-material" signifies incompressible, non-viscous, zero-mass and continuous fluid.

A) The absolute space of the universe is a dynamic non-material fluid.

B) The above absolute space has a maximum limiting linear velocity of flow equal to the light velocity in absolute vacuum,  $c$ , and a maximum limiting angular velocity,  $\omega$ , when in circular motion.

### 1.2 Creation and stability of void

A circular irrotational vortex of space is shown in fig. 1.2. The streamlines are concentric circles. The flow is steady, due to which the velocity and acceleration of space points do not change with time. If this vortex<sup>§</sup> pertained to a fluid which pos-

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<sup>§</sup> Applied Hydrodynamics - H. R. Valentine, p. 106.

essed a constant density,  $\rho$ , the element of fluid of volume,  $dA dr$ , will have a mass,  $\rho dA dr$ . The two opposite accelerations that balance on the element are the outward centripetal acceleration and the inward net pressure force divided by the mass. It can be shown that in the irrotational vortex,  $ur = \text{constant}$ . In case of irrotational vortex of space, from postulate A,  $\rho$  is zero, and hence there is neither a force (which is proportional to mass), nor a pressure (proportional to force) acting inward on the element. The outward acceleration is no more balanced. On a streamline (fig. 1.2), the outward acceleration,  $u^2/r$ , acting simultaneously on diametrically opposite points, creates a tearing action tending to break down the space. When space points on a streamline with radius  $r_e$  (where  $r_e$  is the elementary<sup>§§</sup> length) reach the limiting angular rotation,  $\omega$ ,

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<sup>§§</sup>  $r_e$  is defined as the minimum possible radius of rotation of space point at the maximum tangential velocity  $c$ .

which is also equal to the maximum velocity gradient,  $c/r_e$ , (postulate B), the space breaks down into a spherical void of a definite radius  $r_e$ .

Regarding the stability of the void, the following considerations apply:

Since the space vortex is irrotational,  $ur = \text{constant}$ . In the transverse plane XZ in fig. 1.1b, the interface point z has  $u = c$ , and  $r = r_e$ . Therefore at point z,  $cr_e = \text{const}$ , and also,  $\omega r_e^2 = \text{constant}$ . Any increase in  $r_e$  decreases  $\omega$ . A decreased  $\omega$  cannot sustain a void which, therefore, shrinks back to its original radius  $r_e$ . Similarly, a decrease in  $r_e$  by  $dr$  tends to increase  $c$  and also the velocity gradient, which becomes  $c/(r_e - dr)$ , that is greater than  $\omega$ . The void is restored back to its radius  $r_e$ . The electron void has a dynamic stability.



### 1.3 Generation of fields

As discussed in paragraph 1.2, the velocity field  $u$  creates outward acceleration vector,  $a_r$ , that is radial and has magnitude  $u^2/r$ . The limiting value of  $a_r$  will be  $c^2/r_e$ . The breakdown of space takes place due to the outward  $c^2/r_e$  at the limiting velocity gradient  $c/r_e$ . As long as the space is not broken, the circulating space within the sphere of volume equal to void, has positive energy. (As defined later, dynamic state of space is the fundamental state of positive energy). After the creation of void, the positive energy from within the void is distributed in space as fields (discussed further), leaving the void fieldless and negatively energised. The negative potential within the void reverses the vectors on the interface which point radially inward following the void creation. Fig. 1.1b shows the velocity field and acceleration field in electron structure arising from the basic velocity field produced due to circulation of space (fig. 1.2).

## 2. ELECTRIC FIELD

### 2.1 Electronic charge and electrostatic field

In fig. 1.3, on the interface, consider an infinitesimal surface  $ds$  on an elemental ring area,  $dA = 2\pi r_e \sin\theta r_e d\theta$ , which possesses tangential velocity,  $u = \omega r_e \sin\theta$ . The electric charge  $dq_s$  on  $ds$  will be defined as the cross-product of  $d\vec{s}$  and  $\vec{u}$ , that is,  $d\vec{q}_s = d\vec{s} \times \vec{u}$ , which is a vector quantity (discussed further). Since  $\int ds = dA$ , the charge  $dq$  on the elemental ring area will be  $dq = u dA$ . Total charge on the interface will be

$$q_e = \int_0^\pi 2\pi c r_e^2 \sin^2\theta d\theta = \frac{\pi}{4} 4\pi r_e^2 c. \quad (2.1)$$

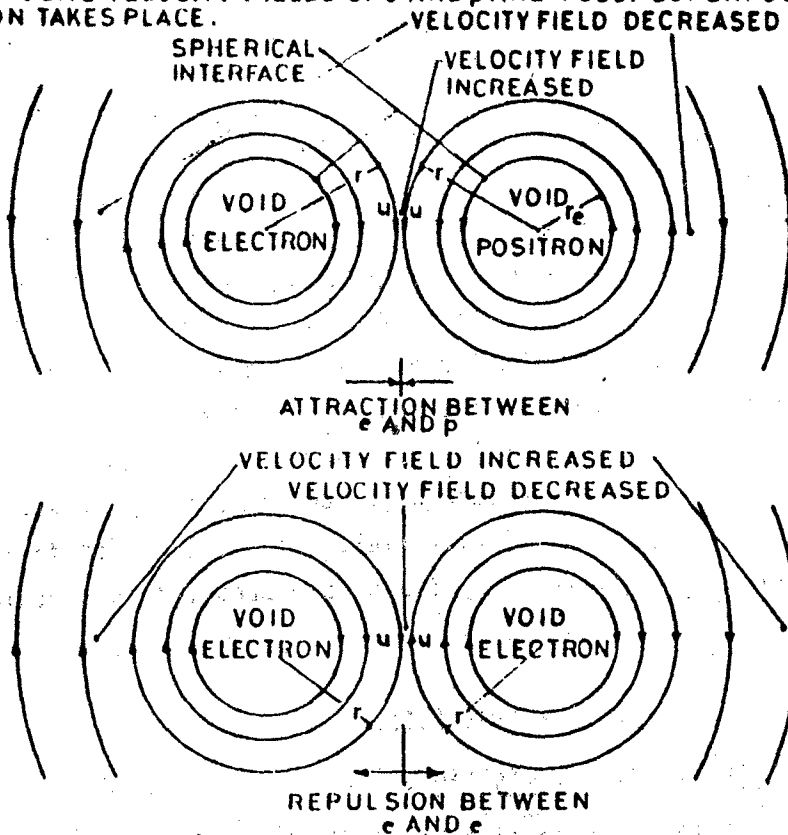
The  $q_e$  is proportional to the product of void surface and limiting velocity fields,  $c$ , and is a vector with direction of  $\omega$ . The dimensions of  $q_e$  are  $\text{length}^3/\text{time}$ .

When many electrons accumulate on a body, the total charge on the surface is a scalar quantity. This is due to specific orientation of their spin axes (along which the electric field, as shown further, is zero) relative to the body's surface. Due to limitation of this paper, this aspect will be discussed elsewhere.

The direction of spin (fig. 1.1a), as seen by an observer on the +Y axis and looking towards the void, makes the particle "negatively" charged electron, whereas the opposite spin would be "positively" charged positron. The mutual interaction of electron-electron and electron-positron, due to spin directions of their velocity fields and their superposition, are qualitatively explained in fig. 2.1.

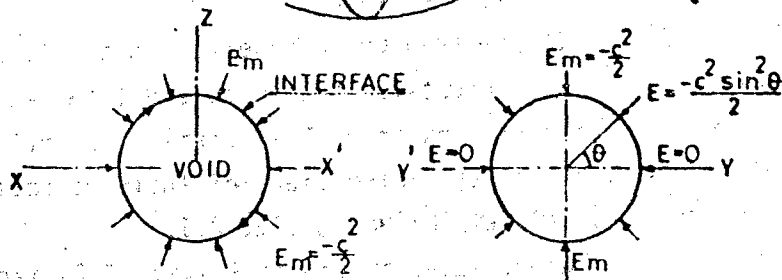
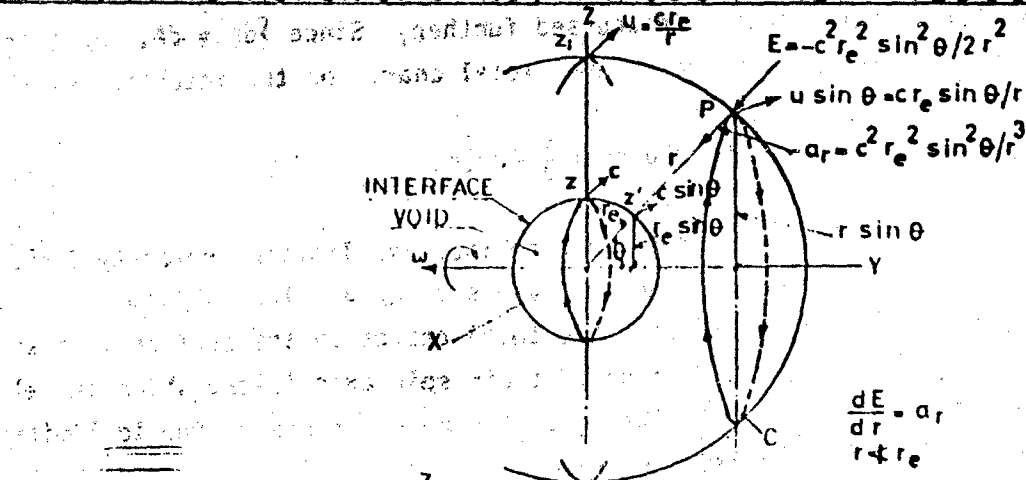
The velocity field (hereafter abbreviated as  $vf$ ) at P (fig. 2.2) tangential to circle C is  $c r_e \sin\theta / r$ , and produces an inward radial acceleration field (hereafter abbreviated as  $af$ )  $a_r = c^2 r_e^2 \sin^2\theta / r^3$ . The electric field E at P is defined as  $dE/dr = a_r$ , from

SINCE,  $ur = \text{CONSTANT}$ , AN INCREASE IN  $u$  BETWEEN  $e$  AND  $p$ , TENDS TO REDUCE  $r$ . THE PARTICLES ARE ATTRACTED TILL THE OPPOSITE VELOCITY FIELDS OF  $e$  AND  $p$  ARE FULLY SUPERPOSED, WHEN ANNIHILATION TAKES PLACE.



SINCE,  $ur = \text{CONSTANT}$ , A DECREASE IN  $u$  BETWEEN  $e$  AND  $e$ , TENDS TO INCREASE  $r$ , AND THE PARTICLES ARE REPELLED.

**FIGURE 2-1-INTERACTION OF  $e$  AND  $p$  THROUGH THEIR VELOCITY FIELDS**



DISTRIBUTION OF E ON STREAM LINE AT INTERFACE CUT BY PLANE XZ

DISTRIBUTION OF E AT INTERFACE CUT BY PLANE XY

**ELECTRIC FIELD**

**FIGURE-2-2**

which

$$E = -c^2 r_e^2 \sin^2 \theta / 2r^2, \quad (2.2)$$

which is an inward radial vector both for electron as well as positron, with a minimum value of  $r$  equal to  $r_e$ . (Electron and positron will hereafter be abbreviated as  $e$  and  $p$ , respectively). The value of  $E$  along axis  $Y$  on the void, for  $\theta = 0$ , from eq. 2.2, is zero. The maximum value of  $E$  is in the transverse plane  $XZ$ , when  $\theta = \pi/2$ ,

$$E_t = -c^2 r_e^2 / 2r^2, \quad (2.3)$$

and at the interface, where  $r = r_e$ ,  $E_{int} = -c^2/2$ .

Confining, hereafter, the analysis in plane  $XZ$ , for simplicity, it can be shown that at  $z$  (fig. 2.2), where  $vf$  is  $u = cr_e/r$ , the electric potential is  $cr_e u/2$ , which shows that  $vf$  is the basic field that originates all the electrostatic phenomena.

## 2.2 Dielectric constant and Coulomb's constant

The following equation, which is similar to Coulomb's law, can be derived for electric field in  $XZ$  plane (fig. 2.2) from eq. 2.3 and the basic charge equation (2.1)

$$E_t = \frac{2}{\pi} \frac{1}{4\pi/c} \frac{q_e}{r^2}. \quad (2.4)$$

The  $vf$  distribution on the interface streamline varies from  $c$  in plane  $XZ$  to zero on the axis of rotation. Due to this variation of  $vf$ , the charge distribution on interface is not spherically symmetric. The coefficients  $-2/\pi$  in eq. (2.4) and  $\pi/4$  in eq. (2.1) appear due to the above non-symmetry. Neglecting the coefficient  $-2/\pi$  in eq. (2.4), we can write

$$E_t = -q_e / 4\pi (1/c) r^2. \quad (2.5)$$

Coulomb's equation for electron as a spherically symmetric point charge runs

$E_t = q_e / 4\pi \epsilon_0 r^2$ , where  $\epsilon_0$  is the dielectric constant of the absolute vacuum.

From eq. (2.1), dimensions of  $q_e$  are length<sup>3</sup>/time. The dimensions of  $E$  are length<sup>2</sup>/time<sup>2</sup>.

With these dimensions and comparing the above equations, it is discovered that  $\epsilon_0 = 1/c$ , with electron as the unit of charge. In Coulomb's equation of interaction of point charges, as given above, it is found that with electron as unit of charge,  $\epsilon_0 = 1/4\pi c$ , in

the cgs system, and  $1/4\pi \epsilon_0 = c(9 \cdot 10^9)$  in the mks system. From the experimentally measured values of  $q_e$  in cgs and mks systems, the above relationships can be confirmed.

Thus: The Coulomb's constant is a composite quantity and is directly proportional to  $c$ .

## 2.3 Gauss' law

A further proof to the relationship  $\epsilon_0 = 1/c$ , the charge equation and eq. (2.2) for

E can be obtained by deriving Gauss' law. Consider an elementary surface  $dA = 2\pi r_e^2 \sin\theta d\theta$  on interface (fig. 1.3) which will have an electric flux  $E dA$  on it. Substituting the value of E at interface from eq. (2.2), we obtain for the electric flux through the elementary area  $d\phi = (-c^2 r_e^2 \sin^2\theta / 2r^2) 2\pi r_e^2 \sin\theta d\theta$ . Integrating from  $\theta = 0$  to  $\theta = \pi$ , we obtain for the total flux through interface  $\phi = -(4\pi/3)c^2 r_e^2 = -(1/3)(4\pi r_e^2 c)/(1/c) = -(1/3)q_e/\epsilon_e$ , which is Gauss' law, except for the coefficient -1/3, appearing due to non-symmetry of E and the inward nature of E.

#### 2.4 Nature of mass

The mass is the effect produced by the void which, as discussed before, is created due to space breakdown and its displacement. In fig. 1.3, the mass,  $dm$ , of the elemental volume  $dV = (\pi r_e^2 \sin^2\theta) r_e d\theta$  is defined as

$$dm = dV (\text{Tangential velocity at interface of space displacement})$$

$$= (\pi r_e^3 \sin^2\theta d\theta) \omega r_e \sin\theta = \pi c r_e^3 \sin^3\theta d\theta.$$

Taking the integral over the whole volume of the void, we obtain

$$m_e = \int_0^\pi c r_e^3 \pi \sin^3\theta d\theta = (4\pi/3) r_e^3 c. \quad (2.6)$$

Thus: Fundamental mass = fundamental void volume x light velocity.

The fundamental mass has dimensions length<sup>4</sup>/time and is a vector quantity with direction along the vectors of  $\omega$ . An aggregation of  $m_e$  in a spherical assembly gives mass as a scalar quantity, the reason for which will be discussed elsewhere, due to limited scope of this paper.

Similar to charge, mass is also quantized due to stability of only one size of void as discussed before. Nuclei<sup>9</sup> of atoms and stable particles will have their masses in

<sup>9</sup> Brief discussions on nuclear structure is given in author's works: (i) Space Vortices of Energy and Matter (1978), (ii) The Origin of Electron's mass, Charge, Gravitational and Electromagnetic Fields from the Empty Space (1982) and (iii) The Substantial Space and Void Nature of Elementary Material Particles (1977).

exact multiples of  $m_e$ . A new unit of mass,  $\mu$ , with  $\text{cm}^4/\text{sec}$  as its dimensions, can be shown to have relationship:  $1 \text{ g} = 7.8 \cdot 10^6 \mu$ . From the charge equation and the known value of  $q_e$  in CGSE of which the dimensions found before are  $\text{cm}^3/\text{sec}$ ,  $r_e = 4 \cdot 10^{-11} \text{ cm}$ . Now from the mass equation (2.6), with this value of  $r_e$  and the known value of  $c$ ,  $m_e = 7.5 \cdot 10^{-21} \mu$ , which is  $9.6 \cdot 10^{-28} \text{ g}$ , and being close to the experimentally determined value of  $9.1 \cdot 10^{-28} \text{ g}$ , provides quantitative proof to the mass equation.

### 2.5 Electromagnetic mass of electron

An electron moving uniformly at velocity  $v$  (which is low compared to  $c$ ) possesses a momentum,  $p$ , due to its electromagnetic field,  $p = (2/3)(q_e^2/4\pi\epsilon_0)v/r_e c^2$ , where the coefficient  $(2/3)q_e^2/4\pi\epsilon_0$  is called electromagnetic mass. The significance of this coefficient can be checked with the use of the mass equation, the charge equation and the relationship  $r_e = 1/c$ , developed before. It can be shown that the coefficient reduces to  $(\pi^2/8)m_e$ , which indicates that the electromagnetic field energy has a mass-equivalent; mathematically, however, the basic property of fundamental mass, that it is proportional to void volume, produces gravity field (discussed further) and that it is responsible for inertia property due to motion of fieldless void in nonviscous space (discussed elsewhere), is not possessed by the electromagnetic mass.

### 2.6 Creation of energy

In fig. 1.3, consider an elemental void volume,  $dV = \pi r_e^2 \sin^2 \theta r_e d\theta$ , which is created due to displacement of space through the interface at tangential velocity,  $\omega r_e \sin \theta$ . The mass of the disc element considered, as discussed in paragraph 2.4, will be  $dm = dV \omega r_e \sin \theta$  which is  $\pi r_e^3 c \sin^3 \theta d\theta$ . The element of interface in the disc has area  $2\pi r_e \sin \theta r_e d\theta$ , with an inward radial acceleration field,  $\omega^2 r_e^2 \sin^2 \theta / r_e \sin \theta$ , that is,  $c^2 \sin \theta / r_e$ , everywhere on it. Consider a case when the elemental disc collapses - a process opposite to creation of the void. The acceleration field,  $c^2 \sin \theta / r_e$ , will be radially displaced up to a length  $r_e \sin \theta$ . The energy released due to collapse of the elemental disc is

$$\begin{aligned} dE &= dm (\text{acceleration field}) (\text{displacement of field}) \\ &= (\pi r_e^3 c \sin^3 \theta d\theta) (c^2 \sin \theta / r_e) (r_e \sin \theta) = \pi r_e^3 c^3 \sin^5 \theta d\theta. \end{aligned}$$

Total creation energy or the energy released due to collapse of the spherical void is

$$E = \int_0^\pi \pi r_e^3 c^3 \sin^5 \theta d\theta = \frac{4}{5} \frac{4\pi r_e^3 c^3}{3} c^2 = \frac{4}{5} m_e c^2. \quad (2.7)$$

The coefficient,  $4/5$ , appears due to the  $v$  of  $e$ , being axisymmetric rather than having spherical symmetry. In an assembly of  $e$ s and  $p$ s that form stable nuclear particles, the mass distribution will have spherical symmetry, and Einstein's mass-energy equation,  $E = mc^2$ , should apply.

### 2.7 Electrostatic energy in the field of electron

The energy density in the electrostatic field of electron is given by  $\epsilon_0 E^2/2$ . From eq. (2.2) and the relationship  $r_e = 1/c$ , we obtain for the energy density

$dE_{\text{electrostat}}/dV = E^2/2c = (1/2c)(c^4 r_e^4 \sin^4 \theta / 4r^4) = c^3 r_e^4 \sin^4 \theta / 8r^4$ . The integration for the total electrostatic energy over the whole space gives

$$E_{\text{electrostatic}} = \int_{r_e}^{\infty} \int_0^{\pi} \frac{\pi c^3 r_e^4 \sin^4 \theta}{8r^4} 2\pi r^2 \sin \theta dr d\theta = \frac{1}{5} \frac{4\pi r_e c}{3} c^2 = \frac{1}{5} m_e c^2. \quad (2.8)$$

The lower limit of radius in the above integration is  $r = r_e$ , because the void is fieldless. This avoids the present serious difficulty associated with a point charge which has infinite energy in its electrostatic field due to  $r$  varying from zero to infinity.

### 2.8 Gravitation

Consequent to the void creation, the creation energy,  $(4/5)m_e c^2$  (from eq. (2.7)), is distributed in space as velocity field which produces electrostatic field energy,  $(1/5)m_e c^2$  (from eq. (2.8)), and the remaining energy,  $(3/5)m_e c^2$ , as gravitational field energy. The gravitational field (fig. 2.3) is directly proportional to the radial displacement that each space point will undergo as the incompressible space of volume equal to void volume is radially forced out. A space point at a radial distance  $r$  from the void centre will have an inward gravitational field

$$g = (k/4\pi c)m_e/r^2, \quad (2.9)$$

where  $k$  is  $(\text{unit time})^{-2}$ , that is  $\text{sec}^{-2}$ , in cgs system, and is a convenient constant introduced to obtain the appropriate dimensions of  $g$ . The gravitational constant for electron,  $G_e$ , is  $G_e = k/4\pi c$ . From further detailed analysis on gravitation, not given here, it is concluded that the gravitational constant will vary from atom to atom and for heavier nuclei gravitational constant will be comparatively smaller. The gravitational constant is inversely proportional to light velocity. A quantitative proof to eq. (2.9) is obtained by deriving from it (with the use of new unit of mass and a new mass equation) the value of the gravitational constant for an atom of average mass.

### 2.9 fundamental nature of light

Refer to fig. 2.4. Suppose the void collapses in such a way that the space flows radially within the void at velocity  $c$ . The duration of the collapse is  $\Delta t = r_e/c$ . During the period  $\Delta t$ , a shell of radial width  $c \Delta t$ , that is,  $c r_e/c = r_e$ , will be formed and transmitted outwards at a speed<sup>§</sup>  $c$ , deenergising the universal space. The spherical shell

<sup>§</sup> Transmission of all fields in space, which energise or deenergise the space, is supposed to take place at light velocity.

SPHERE OF VACUUM BREAK-DOWN AND VOID CREATION (RADIUS  $r_e$ )  
 $k = 1/\text{sec}^2, \text{IN.} - \text{GS.}$   
 (DIMENSIONS OF  $m_e$ : LENGTH/TIME)

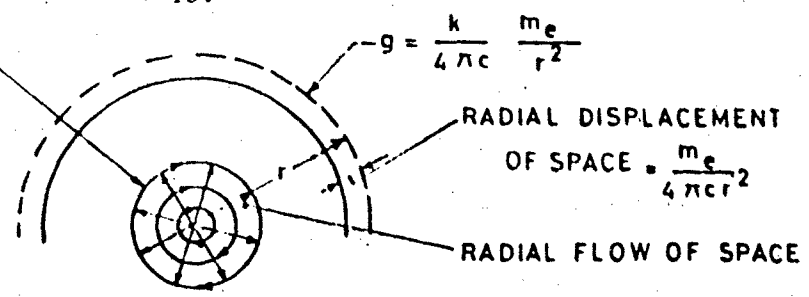


FIGURE 2-3-GRAVITATION

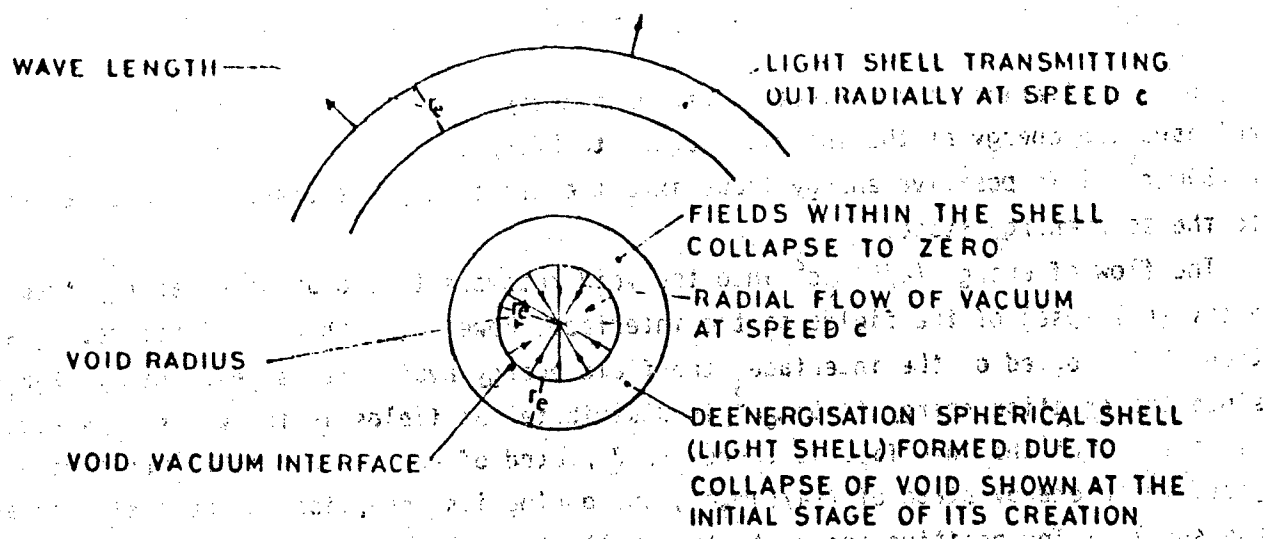
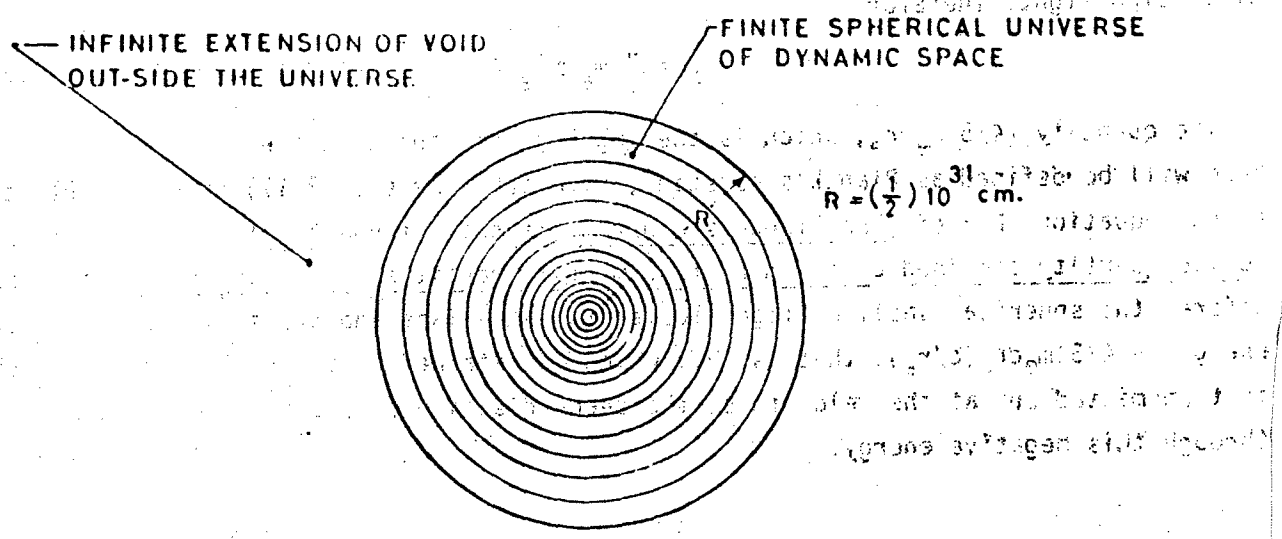


FIGURE 2-4-ANNIHILATION LIGHT



FINITE UNIVERSE

FIGURE 2-5 3A-6

produced due to decay of fields, consequent to the electron's annihilation, is light. The wavelength is equal to  $r_e$ . The spinning interface of the electron has an angular momentum. In fig. 1.3, considering an elemental volume,  $dV = \pi r_e^2 \sin^2 \theta r_e d\theta$ , and tangential velocity,  $\omega r_e \sin \theta$ , we obtain for its mass  $dm = (\pi r_e^2 \sin^2 \theta r_e d\theta) r_e \sin \theta \omega$ , and the angular momentum will be  $dL = dm(\omega r_e \sin \theta) r_e \sin \theta = \pi r_e^2 c^2 \sin^5 \theta dA$ . Integrating from  $\theta = 0$  to  $\theta = \pi$ , we obtain for the total angular momentum

$$L = \frac{4}{5} \frac{4\pi r_e^3 c}{3} c r_e = \frac{4}{5} m_e c r_e. \quad (2.10)$$

The annihilation of the electron causes a decay of  $L$  in the time interval  $r_e/c$ , which releases the energy at the interface equal to  $L/(r_e/c)$ , that is  $(4/5)m_e c r_e / (r_e/c)$ , or  $(4/5)m_e c^2$ . This positive energy flows into the negatively energised void and restores it to the zero energy state.

The flow of energy  $(4/5)m_e c^2$  into the void recovers this quantum of energy from the decay (collapse) of the fields at the interface, however, within the first deenergisation shell formed on the interface, the field energy available is less than  $(4/5)m_e c^2$ , since the creation energy  $(4/5)m_e c^2$  is distributed as fields in the whole universe. The light shell at the interface is therefore depleted of energy, or rather negatively energised to an energy state of  $(-4/5)m_e c^2$ , and during its transmission the fields decay into the shell giving positive energy to the shell, thus making the shell less and less negatively energised. The wavelength,  $r_e$ , of annihilation light shell remains constant.

As shown before, the energy produced at the interface due to the decay of  $L$  is  $E = (4/5)m_e c r_e / (r_e/c)$ . Since the wavelength was defined as  $r_e$ , the numbers of successive shells formed in time unit will be  $c/r_e$ , which will be defined as frequency  $f$  of the annihilation light. Therefore

$$E = \frac{4}{5} m_e c r_e f. \quad (2.11)$$

The quantity  $(4/5)m_e c r_e$ , which is the angular momentum of the electron at the interface will be defined as Planck's constant,  $h$ , which from eq. (2.11) gives the Planck's energy equation,  $E = hf$ . The Planck's constant is not a fundamental quantity. It is a composite quantity combined of the more fundamental quantities  $m_e$ ,  $c$  and  $r_e$ . As discussed before, the spherical shell of light leaves the interface and transmits out with negative energy,  $-(4/5)m_e c r_e (c/r_e)$ , that is  $-hf$ , which is retained in the shell and as the shell is transmitted out at the velocity  $c$ ; the deenergisation of spatial fields is achieved through this negative energy.



### 3. MOMENTUM, KINETIC ENERGY, MAGNETIC FIELD

From the velocity fields, set up due to translation of void relative to space, expressions for momentum,  $m_e v$ , and kinetic energy,  $m_e v^2/2$ , can be derived from the basic principles, with the use of the mass equation. The magnetic field, too, is the phenomenon produced due to motion of void relative to space, as shown below.

The magnetic field  $B$ , due to motion of electron at an angle  $\theta$  to the vector of  $v$  (linear velocity of the electron) and at distance  $r$  given by current physics is

$$B = q_e \frac{v}{c} \sin\theta / r^2. \quad (3.1)$$

The magnitude of  $B$  at the interface of void electron, where  $r = r_e$ , and in the transverse plane  $XZ$ , where  $\theta = \pi/2$ , is found with the above relationship expressing  $q_e$  in terms of  $r_e$  and  $c$  from the charge equation

$$B = (\pi/4)(4\pi r_e^2 c)(v/c)(\sin\frac{\pi}{2})r_e^{-2} = \pi^2 v \quad (3.2)$$

and proves theoretically the direct proportionality of magnetic field to linear motion of electron relative to space. Further details of magnetic field vector (on concentric circles in the  $XZ$  plane) are not discussed in this short article.

### 4. FUNDAMENTAL STATE OF ENERGY

The creation energy,  $m_e c^2$ , from the mass equation becomes  $(Vc)c^2$ , where  $V$  is the void volume, and also the volume of space displaced at velocity  $c$  at the time of creation. A volume of space  $V$ , moving with velocity  $c$ , will have energy  $Vc^3$ , where dimensions of energy are length<sup>6</sup>/time<sup>3</sup>.

### 5. CONCLUSIONS

In the proposed electron structure, the central fieldless void with the "shell" of space rotation at the limiting spin, possesses the strongest fields on its interface, due to which it endows electron with "hard" particle-like behaviour. The continuous fields emanating from the spherical interface and the fluidity of space impart "wave" behaviour to electron. The dual behaviour of wave and particle is possible with the void-vortex model. Further building of the theory on nuclear structure and nuclear particles becomes an ingenious approach to assemble electrons and protons into stable assemblies and provide charge around these assemblies with the spin of space itself. The distinctiveness of the approach is in the generation of material properties from space substratum assigned with non-material and absolute properties.

The radius of the finite sphere of space is determined from the gravitational energy distribution of electron as  $(1/2)10^{31}$  cm.

# SPACE POWER GENERATION

## BY P. Tewari

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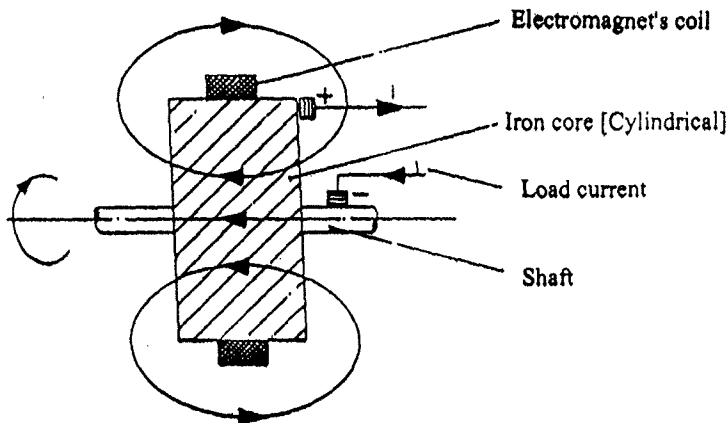


FIGURE 1  
DEPALMA'S N-MACHINE

Editor's Note: Paramahansa Tewari received B.Sc. Engineering (Electrical) degree from Ganaras Engineering College, Banaras Hindu University, India, in 1958.

After working initially in Bhilai Steel Project electrical installations, he joined Department Atomic Energy and worked at Plutonium Plant of electrical works. For one year he was deputed to Douglas Point Nuclear Generating Station (1964-65) for training in field engineering and installation of electrical equipment in Nuclear Power Projects. He worked as Erector Superintendent (Electrical) at Rajasthan Atomic Power Project; Deputy Chief Engineer at Narora Atomic Power Project; Chief of Transmission National Thermal Power Corporation, India, and then to Head of Quality Assurance, 500 MW Group, Nuclear Power Board, Department Atomic Energy.

He has authored works on electron structure and space dynamics.

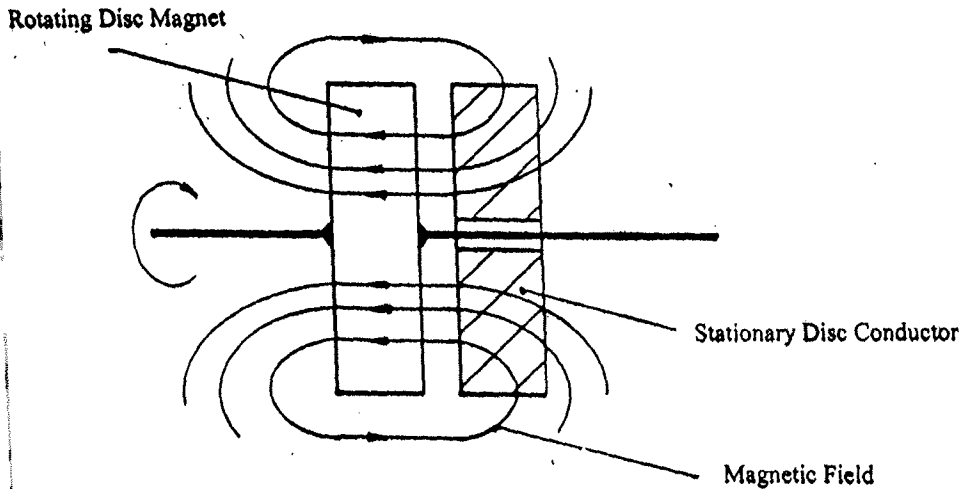
For the presentation of Space Power Generation and lecture on the new principles of space vortex theory he was awarded first prize at Tenth International Congress of Gravity Field Energy, held at Hannover, West Germany in March 1980.

*It has been elsewhere discussed that a rotating electromagnet with its coil mounted rigidly around a cylindrical iron core and in rotation with the core (figure 1) develops DC voltage between the core's periphery and the axis of rotation when DC excitation is given to the coil. Also, conclusive experimental results have revealed that the passage of the load current across the longitudinal magnetic field in the core, does not create torque in opposition of the prime mover's torque, which is unlike the case of a conventional homopolar generator.*

(The basic difference between a conventional homopolar generator and a space power generator (SPG) is in the mounting of the electromagnet's coil. While in the homopolar generator there is relative

disc rotate together (figure 3B) voltage is induced similar to the case shown in figure 3A. From above it is evident that for the electromagnetic induction to take place with a steady flux in the conducting disc, rotation of the conductor (disc) is essential.

**FIGURE 2**

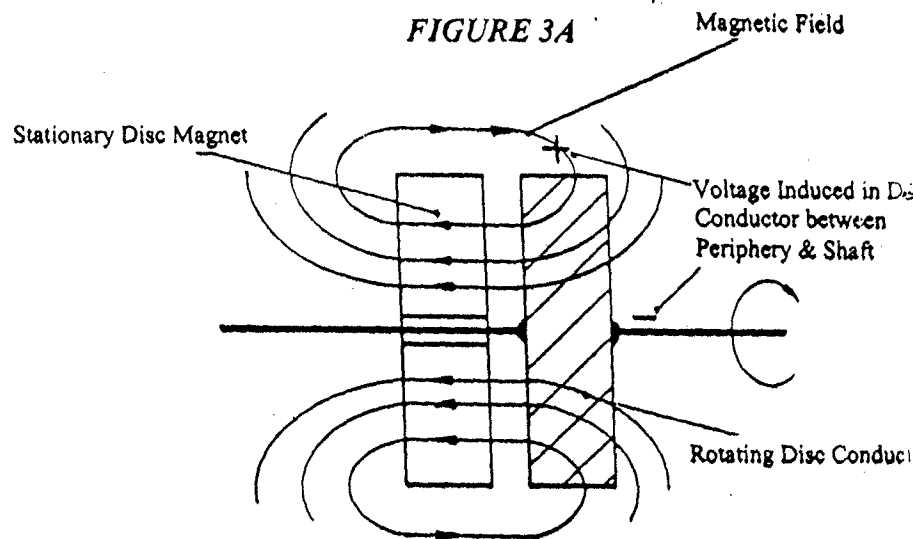


motion between the coil and the core's conductor, in SPG such a relative motion is non-existent). It can thus be inferred that in SPG, due to the co-rotation of the coil and the core, the magnetic field produced by the coil and the magnetic field of the load current, have no relative motion and that should precisely be the basic reason for the absence of torque in opposition to the prime mover's torque when the machine is loaded. Regarding generation of voltage in SPG, the "N-effect" discovered by Bruce DePalma is in accordance with the results of experiments carried out in 1831 by Faraday as discussed below:

Refer to Figure 2. A rotating magnet does not induce voltage in a stationary conducting disc, though there is relative motion between the magnet and conductor. If the disc is rotated and the magnet is kept stationary (figure 3A) voltage is induced despite the fact that in both the above cases, there is no "flux changes: through the conducting disc. Again, when the magnet and the

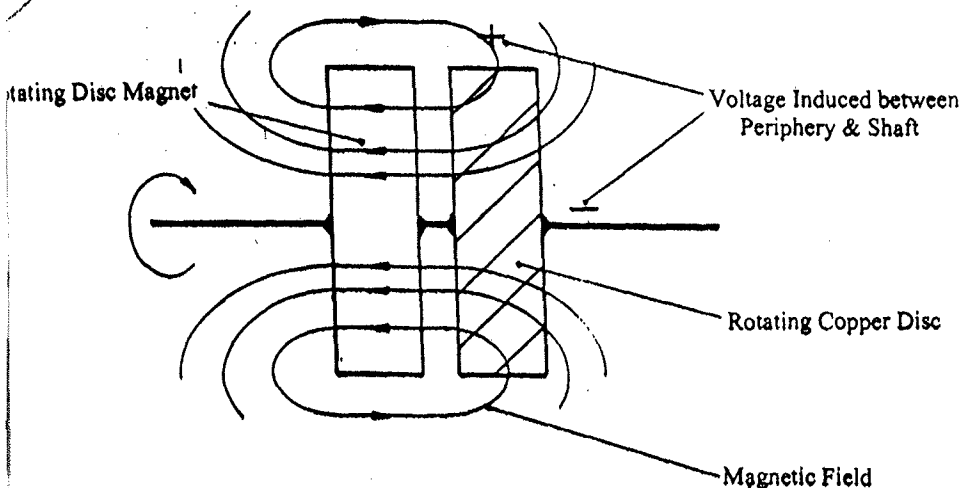
All the known effects of voltage generation due to magnetic induction in DC/AC generators and also transformers take place due to "flux changes" in circuits. In the absence of "flux changes" in the rotating disc conductor, the generatio of EMF is pinpointed due to the rotation of interatomic space as discussed in earlier articles1 describing the phenomenon of space power generation. The electron and other material particles including atoms and molecules are considered as "space vortices" as per Space Vortex Theory2 and it follows that in the rotating disc conductor referred above, along with the space vortices of the atoms and electrons, the inter-atomic space

**FIGURE 3A**



also rotates. The release of orbital electrons, due to interatomic space rotation and further interaction with magnetic field that deflects the electrons and thus forms the electrical polarities and thus forms the electrical polarities have been analysed before1. In the following pages, experimental findings on different

**FIGURE 3B**



very high and was most accurately measured<sup>3</sup> as 760%. In figure 4, basic design of a homopolar generator developed by Adam Trombly<sup>4</sup> is shown. The magnetic field's path through air is across a narrow gap and this reduces the ampereturns to a large extent, however, the disadvantages of this system revealed through the experiments by the writer is in the generation of high torque in opposition to the prime mover within the airgap through which the load current passes through and hence, the advantage of free power generation in the core is substantially lost.

types of SPGs that provide positive proof on the generation of power from space at efficiency much higher than unity are reported.

**DEVELOPMENT OF SPACE POWER GENERATORS:**

A rotating electromagnet (figure 1) with the coil rigidly mounted around the core, was first discovered by Bruce DePalma who named it as "N-Generator". The air return path for the magnetic field being large, the machine requires much higher ampere-turns compared to other designs discussed below, however, the efficiency of power generation of "N-Generator" is

Figure 5 shows basic features of SPG, in which the loss of power in the airgap-1 as mentioned above is partly gained in the airgap-2 since the direction of load current in the airgap-2 is reversed while the magnetic field direction in both the airgaps remain the same. The machine abbreviated as SPGM is in fact a combination of SPG and Space Power Motor (SPM). Efficiency as high as 400% at load current of 3000 A DC and generated voltage 3V DC, at 3000 rpm have been repeatedly measured from different designs of SPGMs.

**FIGURE 4  
TROMBLY'S HOMOPOLAR GENERATOR**

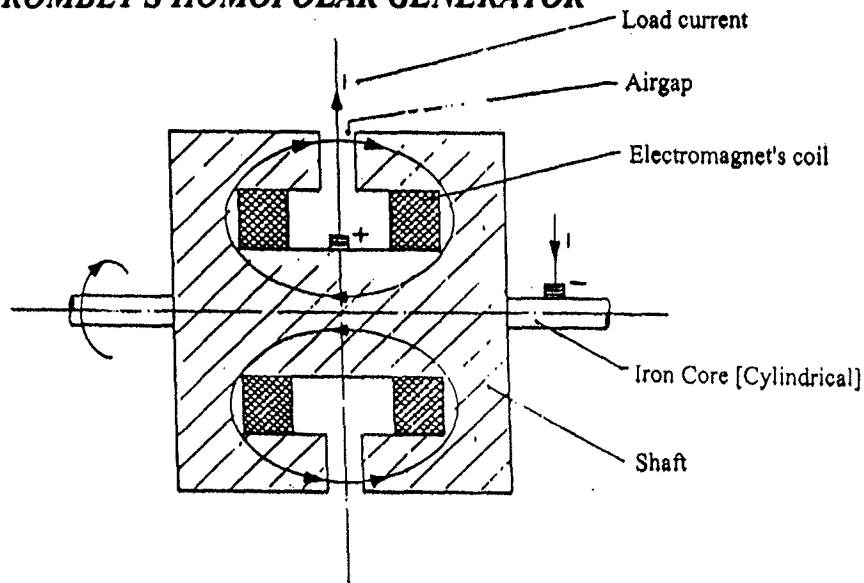
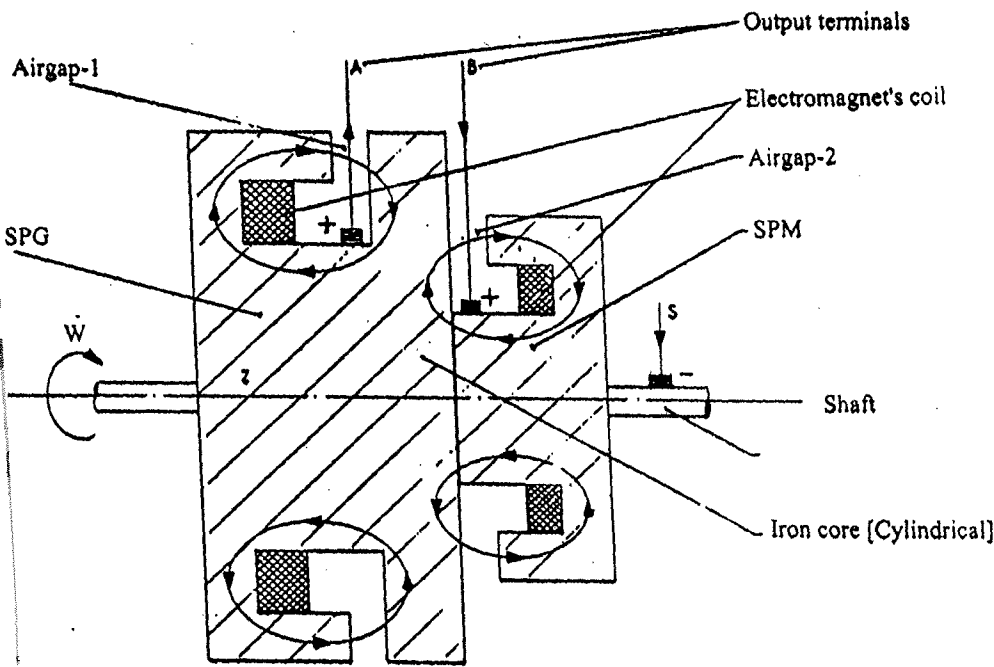


Fig. 6 shows another design of sPG where major portion of the magnetic path is static and thus reduces the rotating mass of the SPG. the advantage of this system is that the load current does not pass through an air gap, and the magnetic field is totally confined within the rotating and stationary iron paths. Initial tests showed that the passage of load current through the shaft interacts, through its magnetic field, with the magnetic field in the stationary vertical iron path and thereby reduces the efficiency. A larger opening in the vertical iron path around the rotating shaft does provide solution partly to the above loss of power. However, further detailed tests indicate that the static iron paths on either side of the

**FIGURE 5**  
**SPACE POWER GENERATOR**



Note: Terminal 'A' is more positive than terminal 'B'

rotating electromagnet, hold the magnetic field stationary. The efficiency of power generation in the rotating iron core falls down thereby indicating that the rotation of the magnetic field within the core and along with the core conductor is obstructed due to the stationary paths external to the rotating iron core.

Figure 7 shows a SPG coupled to a SPM where SPM's design is based on conventional motor design. The design of the SPG is similar to the one described in figure 5, except for the SPM part. The efficiency of this set is about 300%. The advantage of this motor over SPM shown in Figure 5, is in fact that in SPM, there is a disadvantage in the load current being pushed against the voltage developed within the core and yet there is no torque due to the absence of relative motion between the core conductor and the magnetic

field in the core. Motor action takes place only in the airgap-2 of the SPM unit (figure 5). Whereas in the conventional motor unit (figure 7) the magnetic circuit being different (in the sense that there exists a relative motion between the magnetic field and the rotating disc conductor), motor torque is produced on the entire surface on the rotating disc, whenever it is cut by the flux.

**VOLTAGE DISTRIBUTION IN SPGM:**

Refer to figure 8. If the radius of the central core of SPG is  $r_g$ ,  $B_g$  is the magnetic field there and  $W$  is the angular velocity, the voltage developed in SPG,

$$V_g = (1/2)w B_g r_g^2$$

Similarly, the voltage developed in the central core of SPM,

$$V_m = (1/2)w B_m r_m^2$$

If the magnetic field in the outer flux returns paths for SPG and SPM are  $B'_g$  and  $B'_m$  respectively, the corresponding voltages induced in the outer paths will be,

$$V'_g = (1/2)w B'_g (r_g^2 - r_g^2)$$

and

$$V'_m = (1/2)w B'_m (r_m^2 - r_m^2)$$

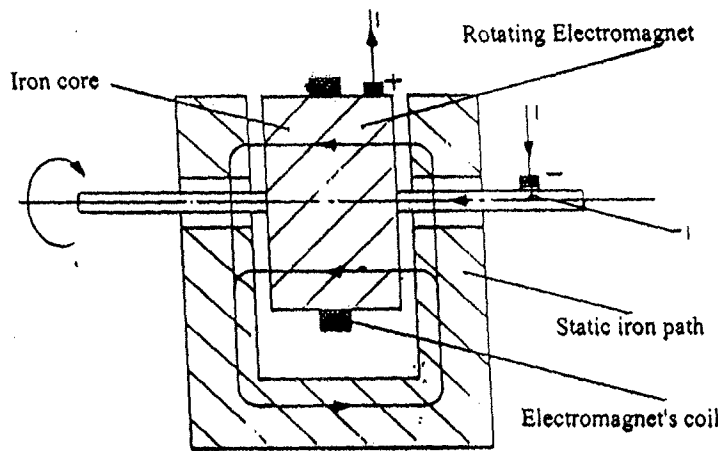
The voltages measured between terminals A, S, and B, S, are  $V_g$  and  $V_m$  respectively.

Though the leads A and B to the respective output brushes do cut the flux in the airgap-1 and airgap-2, no voltage is induced in the leads due to these flux

changes. This is in accordance with Faraday's experiment (figure 2) that a rotating disc magnet does not induce voltage on a stationary conducting disc. If, however instead of stationary lead A, a nonmagnetic ring is welded at the inner core of the SPG as shown in figure 9 due to which the ring is now rotating with the core, the voltage induced between the output brush and the shaft will be  $(V_g - V'_g)$ .

The voltages between points C, D and S at shaft are also quite close to  $(V_g - V'_g)$  and  $(V_m - V'_m)$  respectively.

FIGURE 6



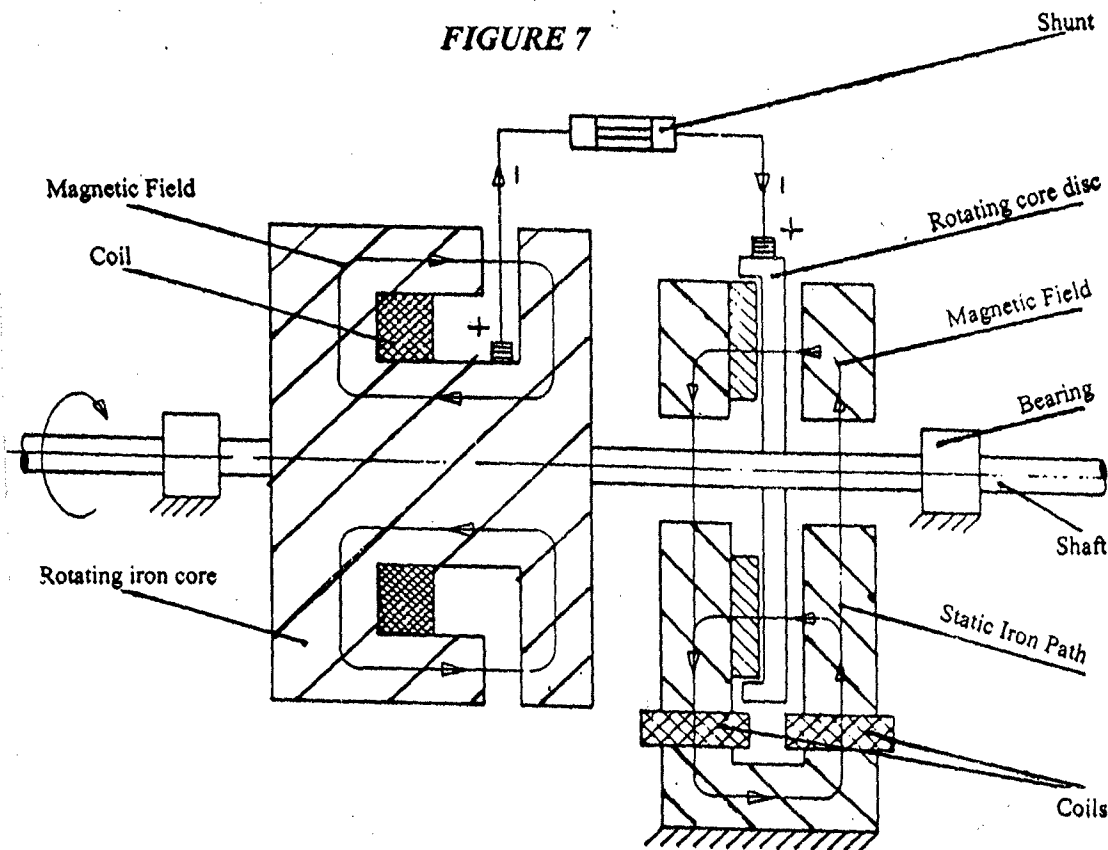
### TORQUE DEVELOPED IN SPM:

The load current from SPG (figure 5) is fed to SPM through a shunt connected between the terminals A and B. The output/input terminals of SPG/SPM are non-magnetic aluminium rings tipped with heavy copper/graphite brushes that can carry three to four kilo-amperes current. The stationary aluminium ring with brushes in the airgap-2 feeding

power to SPM has no induced voltage in the airgap as stated before. However, there is positive torque developed in airgap-2. Here is a case of generation of

torque in the airgap of SPM without any back EMF in the air gap. The current flows in the central core of SPM against the induced voltage  $V_m$ , resulting in some loss of generated voltage  $V_g$ , but producing no torque within the core since the current and the magnetic field there have no relative motion.

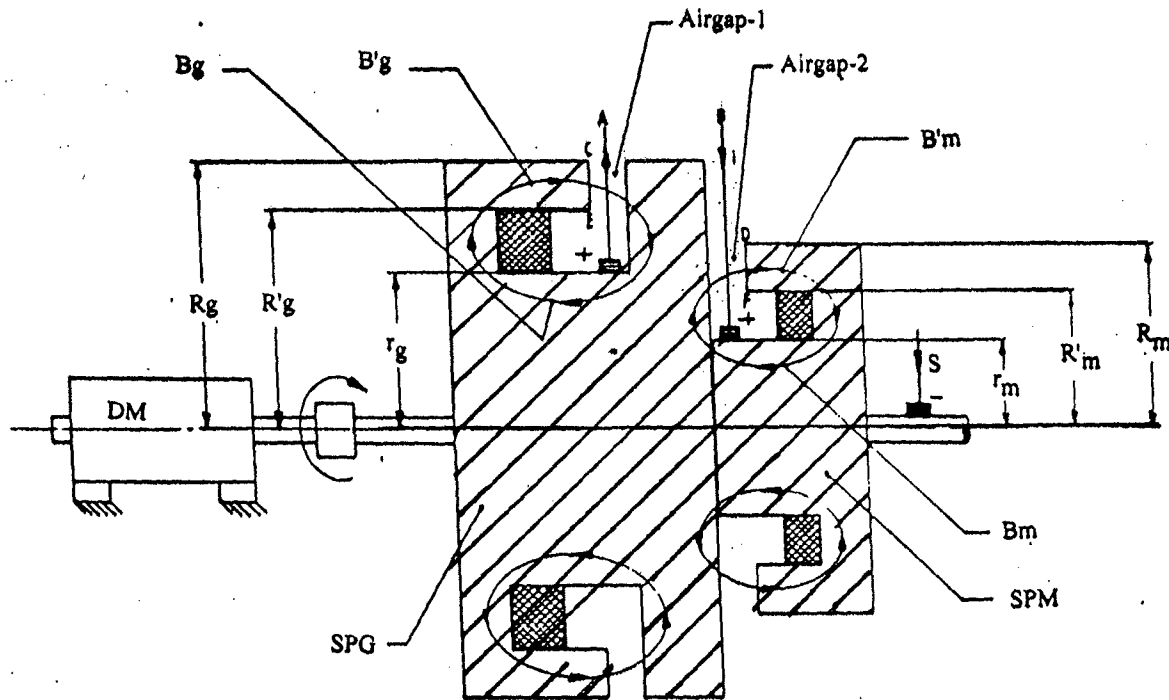
FIGURE 7



### ROTATION OF MAGNETIC FIELD

Refer to Figure 8. In the airgap-1 the output current flows through the stationary brushes. For the production of torque (in opposition to DM's torque for rotation) the magnetic

**FIGURE 8  
SPACE POWER GENERATOR**



Note: Terminal 'A' is more positive than terminal 'B'

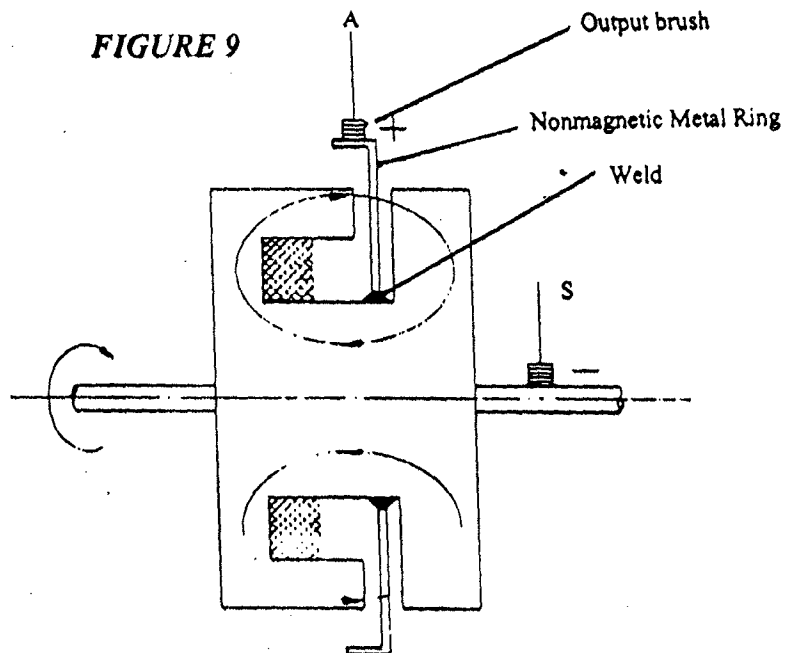
field interacting with the stationary brushes in the airgap must be rotating. Therefore, it is concluded that if the entire path of the magnetic fields ( $B_g, B'_g$ ) is through the magnetic iron which is co-rotating with the coil that produced the fields, then the magnetic field will rotate not only along with the iron core as stated above, but also in the intervening airgap. Whereas, in case of figure 6, where only part of the magnetic path is through stationary iron, the magnetic field behaves as if it is held stationary not only in the stationary iron paths but also within the rotating electromagnet's core despite the co-rotation of the coil and the iron core. In figure 9, the non-magnetic metal ring welded to the iron core rotates with it, and since the magnetic field in the airgap also rotates, no torque can be developed there. Free power can thus be drawn between the terminals A and S, but for the fact that the voltage between A and S is reduced to  $(V_g - V'_g)$ , which has a low value.

open circuit characteristic curves for SPG and SPM are shown in figure 10. Based on the results in Table-1, input/output power curves against speed of rotation are shown in figure 11. It is seen that around 2500 rpm, electrical output  $I^2R$  from the SPG exceeds the

**ELECTRICAL OUTPUT GREATER THAN MECHANICAL INPUT**

The test results of a SPG are shown in Table-1, The

**FIGURE 9**

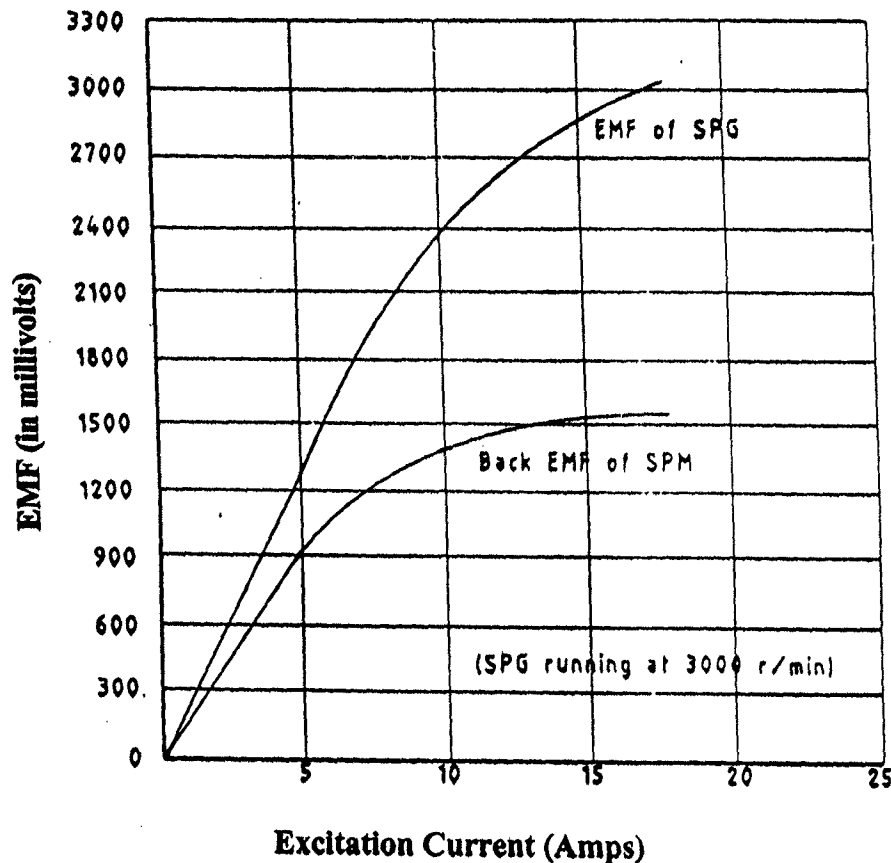


mechanical input to SPG given to rotate it.

As discussed before, there is loss of power of SPG in the core of the SPM where current is forced against the back eMF developed there, without generation of equivalent torque to aid the DM. If this power, termed here as "electromagnetic power" is also added to  $I^2R$  power, total output power curve becomes much steeper as shown in figure 11. A comparison between the curves A and D shows that the rise in mechanical input to sPG when loaded at varying speed is slower than the generatio of the corresponding  $I^2R$  power, which, however, is never the case in conventional electrical generation.

The above tests are only the very few of the numerous tests performed to discover the source of generation of electrical power that exceeds the input mechanical power and thereby violates the law of conservation of energy and also the law of conservation of charge. The only recourse to save these laws is to recognize that the absolute vacuum rather than being an extension of nothingness, is the fundamental and universal substratum of basic reality.

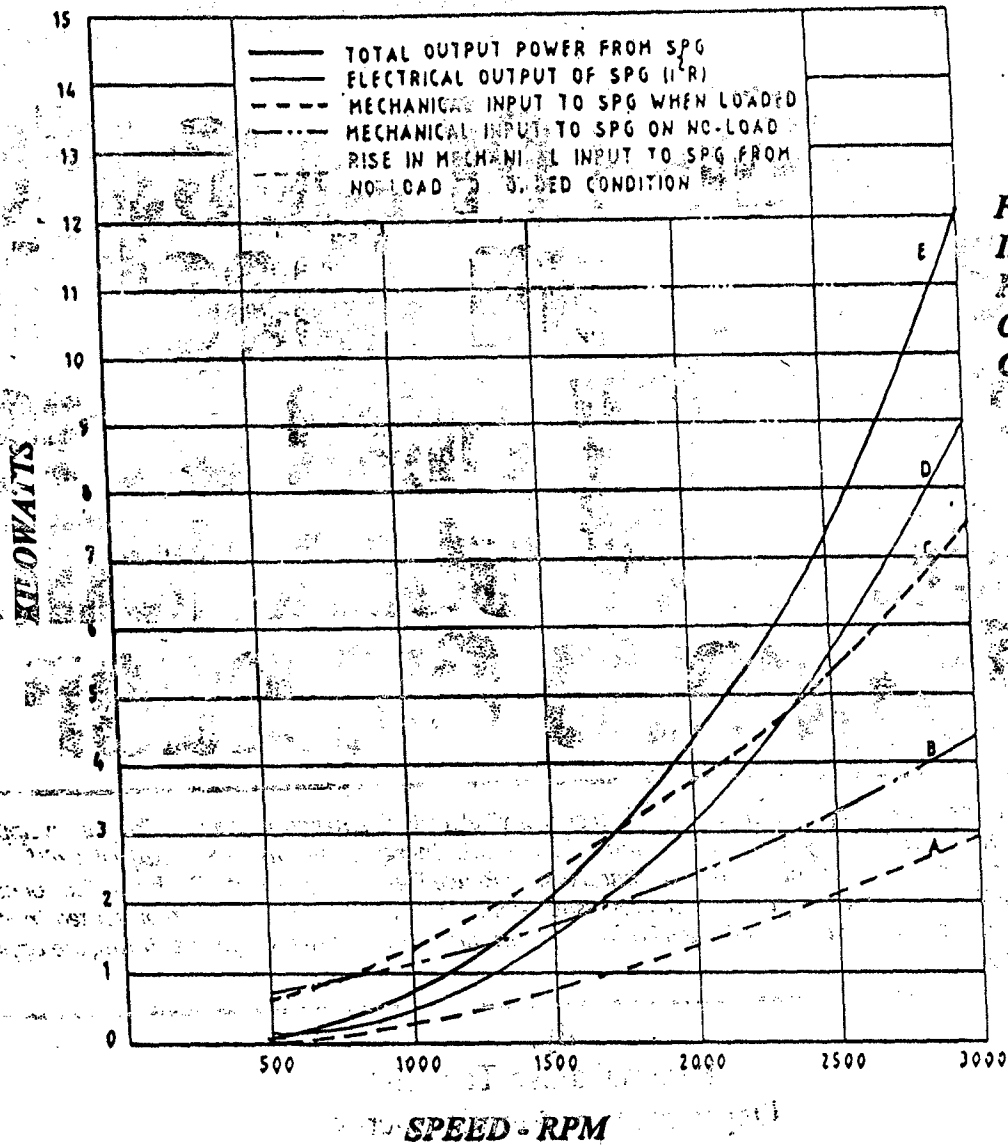
**FIGURE 10**  
**OPEN CIRCUIT CHARACTERISTICS (O.C.C.)**  
**CURVE**



SPG's electromagnet: 2.5 ohms  
Turns: 399  
14 SWG  
Iron core dia: 230 mm

SPM's electromagnet: 1.25 Ohms  
Turns: 350  
145 SWG  
Iron core dia: 140 mm





I)	SPG'S E.M.F. - VOLT (dc)	0.808	1.013	1.523	2.023	2.537	3.030
II)	SPM'S BACK E.M.F. - (dc)	0.288	0.517	0.778	1.033	1.296	1.548
III)	DM'S TERMINAL VOLTAGE - VOLT (dc)	90	170	240	315	385	460
IV)	DM'S NO-LOAD CURRENT - AMPS (dc)	7.6	8.75	9	9.6	10	11.75
V)	DM'S ON-LOAD CURRENT - AMPS (dc)	8.25	10	13	14.75	17	19.75
VI)	INPUT (MECHANICAL) TO SPG WITH DM'S EFFICIENCY AS 82% ON NO-LOAD - WATTS (III) x (IV) 0.82	580.8	1219.7	1771.2	2479.6	3157	4432
VII)	INPUT (MECHANICAL) TO SPG ON-LOAD WITH DM'S EFFICIENCY AS 82% (III) x (V) 0.82	608.8	1394	2558.4	3809.9	5366.9	7449.7
VIII)	RISE IN MECHANICAL INPUT TO SPG WHEN LOADED - WATTS	48	174.2	787.2	1330.2	2209.9	3017.7
IX)	LOAD CURRENT OF SPG - AMPS	200	520	1120	1613.3	2213.3	2986.6
X)	ELECTRICAL OUTPUT (I <sup>2</sup> R) OF SPG - WATTS (I) x (IX)	101	526.7	1705.7	3263.7	5559.8	9049.3
XI)	ELECTROMAGNETIC POWER DELIVERED TO SPM AND NOT CONVERTED TO MECHANICAL POWER - WATTS (II) x (IX)	51.6	268.8	871.3	1665.5	2858.4	4623.2
XII)	TOTAL POWER FROM SPG - WATTS (X) + (XI)	152.6	795.5	2577	4929.2	8428.2	13672.5
XIII)	SPEED - R.P.M.	500	1003	1508	2003	2512	3000
XIV)	MAGNETIC EXCITATION - AMPS (dc)	18	18	18	18	18	18

**TABLE 1**  
**SPACE POWER**  
**GENERATOR - MOTOR**  
**(SPGM) TEST RESULTS**

**SPG: SPACE POWER GENERATOR**  
**SPM: SPACE POWER MOTOR**  
**DM: DRIVE MOTOR**  
**SPG'S ELECTROMAGNET: 2.5 Ohms.**  
**SPM'S ELECTROMAGNET: 1.25 Ohms.**

## Bulletin of

## THE THEOSOPHY SCIENCE STUDY GROUP

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PARAMAHAMSA TEWARI

**The Underlying Unity**

The living beings will seem to be the final products in Nature's working, since the existence of earth, air and water on which their survival apparently depends, must necessarily precede the evolution of the beings. The Upanishads teach that *akasha*, air, fire, water and earth are the basic constituents of the universe. Man, who is a product of these elements, can continue to survive along with other living species on this planet even if he is unaware of the constitution of his own body or the universe, its origin and laws of operation. The survival of the numerous evolutionary stages from amoeba to man is indicative of the protection and safeguards incorporated in Nature's subtle working, and therefore, no man-made power of destructive nature is expected to ever wipe out the human race. There could of course be disturbances that obstruct the evolutionary processes, but these can be only localised effects in a period of comparatively shorter time.

While man's mere ignorance of the cosmic universe cannot make him extinct, a knowledge on the basic structure of the universe and his correlation with it, can certainly sublimate his baser instincts and raise the mental state above animality, thus bringing

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## THE THEOSOPHICAL RESEARCH JOURNAL

Published quarterly by the Theosophical Research Institute, this new journal replaces *Theosophy-Science*. The editors, Dr Ralph H. Hannon and Mrs Dara Kunz state that this journal is concerned with modern scholarship in relation to theosophy. Its purpose is to widen the field of scientific and philosophical knowledge by the application of theosophical principles. The first issue of March 1984 contains articles and book reviews including those by Mrs Emily Sellon on "Science and the Ancient Wisdom"—extracts from this article will be published in this Bulletin—and by Dr Hugh S. Murdoch on "Life on Earth according to Hoyle".

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## THE THEOSOPHY SCIENCE STUDY GROUP

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We welcome the following Life Members, taking up the total up to 114.  
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about a happy living of the human race in a cohesive society by diminishing and moderating the ferocity of competition, selfishness and sensual indulgence that are purposefully introduced by Nature in the world of living species for their very survival and continuance.

Impelled by this noble aim of pursuit of knowledge, man has produced science of matter in the last three hundred years and through which it has been possible to have a deeper insight into the main universal constituents namely, earth, water, fire and air. Matter has been identified and classified into different states, right up to the atomic, nuclear and subnuclear particles, and its mode of interactions has been framed into universal scientific laws. Earth, water and air have been shown to be the final produce of some basic material entities which, with mutual interactions and aggregations, have formed on this planet the material environment conducive to the development of the living beings including man. Similarly fire, or the phenomenon of heat, has been scientifically studied in its various forms and behaviour, and its laws of interactions with matter have been framed. However, physical science in its body of knowledge is not yet complete; it has many anomalies that are awaiting a major break-through in the basic concepts which can reveal the reality of the universe in its bare state, and thus, by showing the unity of matter, fields and energy, can complete the knowledge of at least 'science of matter'. The present stage of science, with

Its enormous technological advantages to social development and welfare to man, has yet failed to reveal the 'underlying unity' of the universe due to its incompleteness and still being in the stage of development. Any analysis made of a basic phenomenon transcending materialism or inferences made with the aid of the conclusions of modern science, would indeed be erroneous due to the above limitation of scientific development where the substratum of the physical theories is yet to be fully grasped.

On the sequence of the generation of the worlds, the Upanishads teach that air was generated from *akasha*, and air in combination with fire, produced water which, in turn produced earth. In modern scientific terms the three states of matter namely, solid, liquid and gas should, in the language of the Upanishad, be taken to correspond to earth, water and air, which in combination with different degree of heat (fire), are interconvertible. But then how did the *akasha* generate air or fundamental form of matter, considering the fact that by 'air' the Upanishads may convey 'finest matter'. This is precisely the question which today needs a direct answer. The modern trend in physics has been to evade this main issue, for around the dawn of this century, the absolute vacuum or space or *akasha* was considered to be empty. An attempt to improve the situation of chaos that arose due to the impossibility of transmission of action in emptiness of space, by recognising the reality of fields in space, has not fully bridged the gap between space and matter by not giving the status of 'absolute substratum of universal reality' to *akasha*. For, how else the space can generate the basic states of matter as asserted by the Upanishads, if it is not a dynamic state pulsating with energy? In an emptiness and void space, if energy for generation of even the inert matter cannot exist, where is the question of it being a seat of consciousness and bliss?

We are today directly confronted

with two views which have certain opposite elements in them. One is of materialism, which is, by and large, in line with the current scientific development, by which the fundamental reality of the universe lies only in cosmic matter that moves due to the mutual interacting fields in void space, which, apart from matter and its associated fields in it, has no independent existence of its own. By some force of magic this cosmic matter came into sudden existence and gathered tremendous motion at the universal scale, and in due course, distributed itself, and finally organised in an orderly motion of stars and planets including our earth.

The separate aggregations of cosmic matter, despite their mutual interactions through fields, produce discontinuity and discreteness as the basic law of materialism. Also, apart from the fact that the physical quantities on which such a theory of matter rests, its foundation remains unexplained with regard to their origin and fundamental nature; the scope of analysis is confined to only inert entities which, again, under certain miraculous working conditions and chance, generate consciousness, life and evolutionary processes to such a high degree of orderliness, precision and perfection, automation and control, that living beings with such intricate and complex organisation are produced. The anomalies of materialism in addition to its ignorance on the basic source of universal matter and energy, are the generation of sentience from inert and insentient matter, continuity of fields originating from discrete material particles, generation of ordered processes of evolution from disorderly primary bang and explosions. The universe of matter pregnant with energy, its manifestations of charm and beauty, are in existence just for once, only to wither away and die in the course of time and never to return due to dissipation of universal energy through radiation into the remotest voids of the unfathomed hideous darkness. Devoid of any future hopes of re-generation, materialism grips at

every opportunity like a drowning man at the floating straw, and attempts to convert it for purely selfish ends even at the cost of ethical and moral values. Any concept of omniscience is vehemently rejected because the materialistic theory of 'void space and inert matter' and already stretched to its final limit, broken in parts and covering its obscurities through patches in explaining the process of consciousness in the living beings itself, cannot ever cope with the phenomenon of the omnipresent and omniscient God. Such a devastating effect is produced when an apparently simple point of view that the medium of *akasha* is a void extension is incorporated in physical scientific theories and assimilated in thoughts.

Basically different from the philosophy of materialism is the science of spirituality which lays its foundations on the everful *akasha*, the dynamic substratum of universal energy, which is eternal, self-existent as the most fundamental base of the universe, and which due to its complete homogeneity, mobility and subtilty of the highest order, is quite distinct from even the finest or quantum state of matter. The particles of matter and fields emanate from the *akasha* as its characteristic dynamic states. The material phenomena are only a portion of spiritual phenomena, which being much wider and basic, removes all the restrictions of materialism, by providing an eternal source for cosmic matter and energy, and continuity through the substantial *akasha* between each particle of matter and the entire space. The dynamic *akasha* of spirituality froths and foams in the form of cosmic matter. The basic state of *akasha* possesses the properties that are absolute and non-material. It also has the attributes of Truth-Consciousness-Bliss. The truth as universal energy, generates the cosmic matter in eternal cycles of creation and annihilation. The attribute of 'Consciousness' from its highest state in the pure *akasha* is diluted down to the lowest degree, so that matter