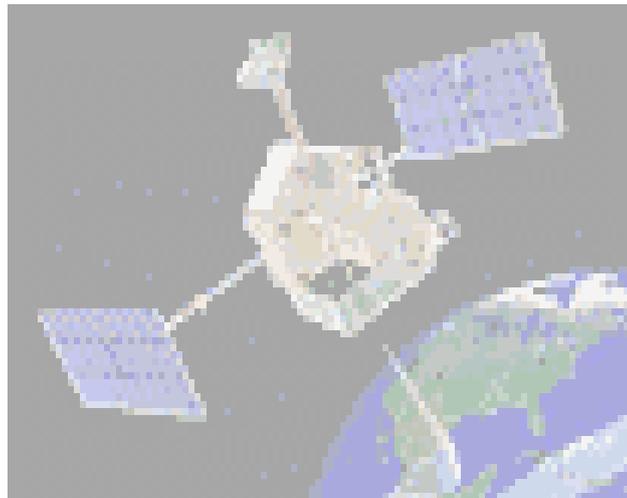


Gravity Motor



Thrust Generation in Space *[without using reaction mass]*



New Theories of Magnetism, Gravitation & Inertia

Invented & authored by
Rakesh Goel

[April 2006]

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The 21st century will be marked with major achievements in Space technology.

Presently, the space transportation is very expensive, unsafe and uncomfortable even after 50 years continuing space technology.

This small booklet describes new theories and its application (Gravity Motor) to provide new directions in solving problems related to space transportation.

The Gravity Motor is the end result of a unique Space Technology being developed at S K Dynamics Pvt. Ltd.-INDIA (SKD). The objective is to generate Thrust or Torque in space using reaction from Ether, without using conventional reaction mass.

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Contents

- 1. Invented theory** (used in gravity motor)
 - 2. Summary of gravity motor** (thrust generator)
 - 3. Theory of magnetism gravitation and Inertia**
 - 4. Concepts used in gravity motor**
 - 5. Possibilities in ether mechanics**
 - 6. Gravity motor details** (thrust generator)
 - 7. More details on theory**
 - 8. More details on experiments**
 - 9. Clues to find out link between forces**
 - 10. References**
- Annex-1:** Simplicity of nature
- Annex-2:** Using log scale
- Annex-3:** Unanswered or partially answered problems
- Annex-4:** About inventor and author

Gravity Motor

Thrust Generation in Space

New theories were discovered and apparatus were constructed to generate thrust in space without using conventional reaction mass.

1. Invented Theory (used in Gravity Motor):

- 1.1 All universe and empty space is filled with a different category of matter named as ether (M4). The ether (M4) is transparent for other forms of matter, viz. Solid (M1), Liquid (M2) & Gas (M3).
- 1.2 Ether is a media for EM wave propagation. The EM waves propagate transversely in ether.
- 1.3 Ether can flow like other fluids, and some laws of Fluid Mechanics are applicable on ether. Magnetic flux is flow of Ether (supported by 'The Laser Drift Experiment').
- 1.4 Inertia is the property generated by magnetic induction due to acceleration and retardation in matter. Ether is associated with the objects and moves or drags as the object moves. However, there is a relative motion between the object and its associated ether during acceleration or deceleration process, which is responsible for inertia (supported by 'The Stone Impact Experiment').
- 1.5 Velocity of Transverse wave propagation in ether is equivalent to the speed of light. This shows that ether has very low density and very high elasticity (bulk modulus).
- 1.6 Gravitational force is generated by motion of charge in matter. It is resultant force of the electrostatic force vector and magnetic force vector between atoms. Gravitational field is a form of complex magnetic induction, which synchronizes motion of electrons in other matter and generates force of attraction.
- 1.7 Ether contains huge energy in the form of flow and vibrations. A combination of magnetic flux, velocity, and vibration in ether can generate force in space by taking reaction from ether. This force is similar to gravitational force.

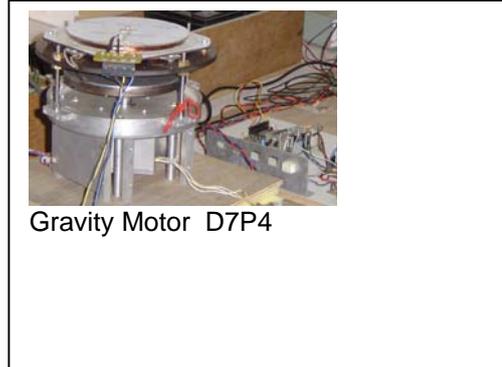
2. About Gravity Motor (Thrust Generator):

[Apparatus based on Invented Theory]

Many prototypes were designed, fabricated and tested to generate thrust without using reaction mass. The prototype D1P14 and D1P24 showed positive results in summer 2000. The latest prototype D7P4 (Design7 Prototype4) is under test with many improvements over previous design and expected to show reliable positive results soon.

Targeted Specifications:

- 2.1 Model: D7P4
- 2.2 Prototype weight: 8 Kg
- 2.3 Weight change: expected 40 gram (0.5%)
- 2.4 Power consumption: below 300 W
- 2.5 Duty Cycle: 50%, 10s ON, 10s OFF
- 2.6 Estimated life: > 1000 Hours



About previous design:

A paper was published on design-1 in Possible Generation of Gravitational Force (ICGA-5) Oct-2001, Russian Gravitational Society.

Gravitation & Cosmology, Vol. 8 (2002), Supplement II, pp. 164-166
Proceedings of the 5th International Conference on Gravitation and Astrophysics of Asian-Pacific Countries, Moscow, 1-7 October 2001
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POSSIBLE GENERATION OF A GRAVITATIONAL FORCE¹

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According to the author's hypothesis, a dipole charge moving along a circular path in the presence of a magnetic field generates an axial gravitational force when subject to a pulse from a current dipole. The device used to examine this possibility has been named a Gravity Motor. The heart of this device is a Capacito-Inductor, which is a new component designed for this apparatus. The Capacito-Inductor has 2 layers of metal and 2 layers of dielectric, and an appropriate voltage across the metal layers and current pulses of known frequency are found to generate an unknown force, interpreted as a gravitational force, when the system is rotated in the presence of a magnetic field. The results of weight changes observed are recorded. Among a number of devices, only three gave positive results.

The abstract is reproduced here.

This design (Design-1) was quite unreliable from engineering point of view. Major problems in this design were deformation of capacito-inductor (CI) by centrifugal force, concentricity of CI w.r.t. axis of rotation, slip rings failure and winding problem of CI (without clean room). Development work is continued to solve these problems in latest design D7. Major changes in the D7 design are using super-enamelled copper wire instead of aluminium foils and using magnetic disk instead of long cylindrical magnet.

3. Theory of Magnetism Gravitation and Inertia

3.1 About Ether:

Assume that ether is like a fluid and EM waves are transverse wave propagation in ether, then ether should also follow the equation of mechanical waves in any fluid.

The speed of all mechanical waves in any fluid follows an expression of the general form

$$v = \sqrt{(\text{elastic property} / \text{inertial property})}$$

$$\text{Velocity of wave propagation in fluid } v = \sqrt{(Y/\rho)} \quad \text{m/s}$$

$$\text{Velocity of light or EM waves } c = \sqrt{(1/(\mu_0 \epsilon_0))} \quad \text{m/s}$$

This correlates that μ_0 is analogous to density (ρ), and $1/\epsilon_0$ is analogous to elastic property Y . The capacitor is analogous to spring of a spring mass system while inductor is analogous to mass. The ϵ_0 is permittivity used for capacitance while μ_0 is permeability used for magnetic circuits.

This symmetry in equation of wave speed clearly proves that light or EM wave propagate in a fluid which is ether. Also, ϵ_0 is related to elastic property while μ_0 is related to density of ether.

$$\text{Unit of permittivity } \epsilon_0 \quad \text{farad / meter} = \text{m}^{-3} \cdot \text{kg}^{-1} \cdot \text{s}^4 \cdot \text{A}^2$$

$$\text{Unit of permeability } \mu_0 \quad \text{henry /meter} = \text{m} \cdot \text{kg} \cdot \text{s}^{-2} \cdot \text{A}^{-2}$$

$$\text{Replace current A by } C \cdot \text{s}^{-1} \quad \text{Coulomb /sec}$$

$$\text{Then} \quad \epsilon_0 = \text{m}^{-3} \cdot \text{kg}^{-1} \cdot \text{s}^2 \cdot \text{C}^2$$

$$\text{or} \quad 1/\epsilon_0 = \text{m}^3 \cdot \text{kg} \cdot \text{s}^{-2} \cdot \text{C}^{-2}$$

$$\text{also} \quad \mu_0 = \text{m} \cdot \text{kg} \cdot \text{C}^{-2}$$

$$\text{Density of ether} \quad \rho = (k \mu_0) (\text{m}^4/\text{C}^2) \quad \text{kg/m}^3 \quad ,$$

$$\text{Bulk modulus of ether} \quad Y = (k / \epsilon_0) (\text{m}^4/\text{C}^2) \quad \text{kg/m} \cdot \text{s}^2 \quad \{ \text{or N/m}^2 \}$$

Where k is a factor for conversion of units

It shows that if the unit of charge C is replaced by m^2 than units are matched. It is known that charge is spread over a surface which proves that charge 'C' has built in m^2 dimensions.

Some Parameters of Ether are described as under.

Wave velocity in ether: "c" 3×10^8 m/s { 331 in air, 1400 in water }

Magnetic Flux: 1 gauss is approximately equal to 5 m/s drift velocity of ether

Elastic Property: {Bulk Modulus} " $1/\epsilon_0$ " 2.7×10^{12} N/m²
 { 2.1×10^9 in Water, 16×10^{10} in steel }

Density " μ_0 " 3×10^{-5} Kg/m³ { 1.29 in air, 1000 in water }

Viscosity of ether almost zero

Note: The values of density and bulk modulus of ether are very approximate and need further investigation.

3.2 About Magnetism:

A moving charge interacts with ether and generates torque on ether which is magnetic field. This torque initiates and maintains flow of ether, which is magnet flux Φ .

The magnetic poles cannot be separated from each other as they are regions of pressure gradient in ether. Continuous flow of Electric current requires complete loop. Similarly, the magnetic flux always completes loop and magnetic poles can not be separated. This property is sufficient to explain that magnetism contains flow, as continuous flow requires close path.

Maxwell equation also explains that net magnetic flux through any closed surface is always zero (Non-existence of magnetic monopole).

$$\oint \mathbf{B} \cdot d\mathbf{A} = 0 \text{ , Non-existence of magnetic monopole}$$

A similar equation in electric circuit can be written as $\oint \mathbf{j} \cdot d\mathbf{A} = 0$

More precise equation is $\oint \mathbf{j} \cdot d\mathbf{A} \cdot dt = 0$, Non-existence of electric current monopole

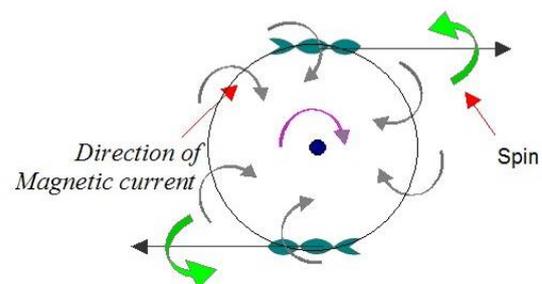
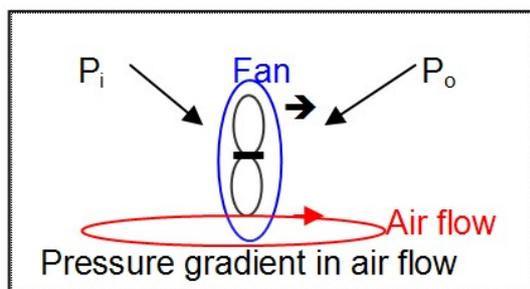
In case of electric flux, it is not zero and electric charge can be separated. Therefore electric flux is really a field, but magnetic flux is a flow, which should be considered as magnetic current.

The correct terminology for magnetic parameters are given below

Parameters	Electricity	Magnetism
Current	Electric Current	Magnetic Current
Current	I Ampere	Φ Weber
Current Density	\mathbf{j} Amp/m ²	B Weber/m ²
Voltage	V Volt	H AT/m
Conductor	All metals	Ferromagnetic Materials
Insulator	Non-metals	Diamagnetic materials
Current is	Flow of charge	Flow of ether

‘H’ is the magnetic voltage, which is a parameter of that torque on ether. It can be considered as Magnetic field. ‘B’ is the consequence of ‘H’. It depends upon ‘H’, permeability μ_0 and also on path resistance. Therefore, **Magnetic Current is more appropriate name instead of Magnetic Flux.**

The fundamental particles are charge and ether, which are responsible for electric and magnetic current. Electric current can flow without an external force or field (in Superconductor ring). However, ether cannot flow without electric current because the electric current generates necessary torque on ether, which is responsible for ether flow (magnetic current).



An electron moving in circular path generates magnetic currents as shown in figure. There is no axial force generated due to these magnetic currents. However, such pair of moving electrons can exhibit force of attraction or repulsion between them depending upon direction of magnetic current.

Change in flow of ether generates a torque in ether in the same axis as flow of charge. Circular flow of ether (magnetic current) about this axis balances this torque.

Consider an example of using a cylindrical electric battery dipped in liquid having some conductivity having terminals at top and bottom. As the water has some conductivity, it can be used for this example. Electrical currents will flow from top to bottom distributed in water. Presently we are not considering electrolysis of water. One can visualize that similar flow of

ether happens in case of magnetism. Magnetic current can flow outside a permanent magnet and completes its path inside the magnet, as in case of electric current path.

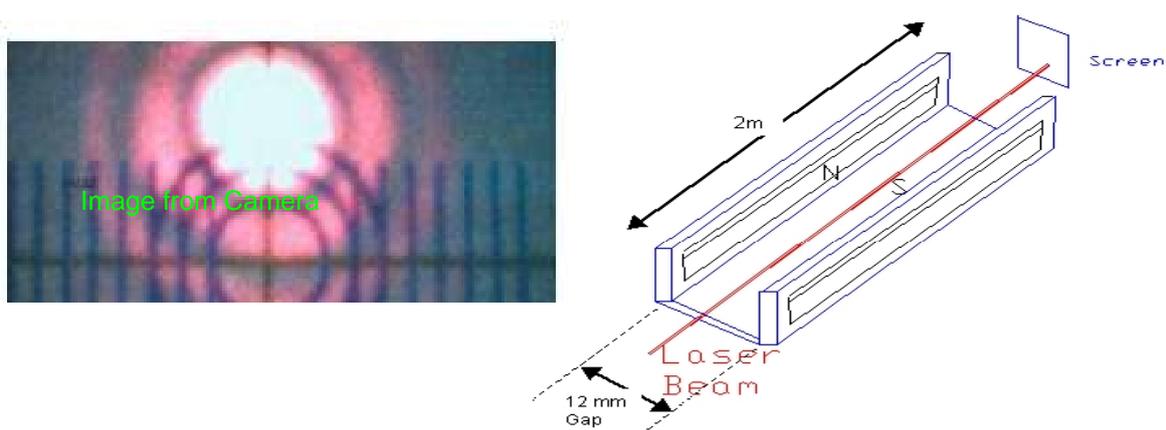
Change in magnetic current generates empirical circular electric field about the axis of magnetic current. This circular electric field is magnetic induction. The electric current due to this field oppose the change in magnetic current.

Magnetic current is a non-uniform flow of ether similar to electric current distribution in conductors. Therefore, flow of ether as magnetic current is very different from velocity of magnetic circuit w.r.t. a nearby conductor. Moving a magnetic circuit perpendicular to magnetic current makes ether flow more uniform.

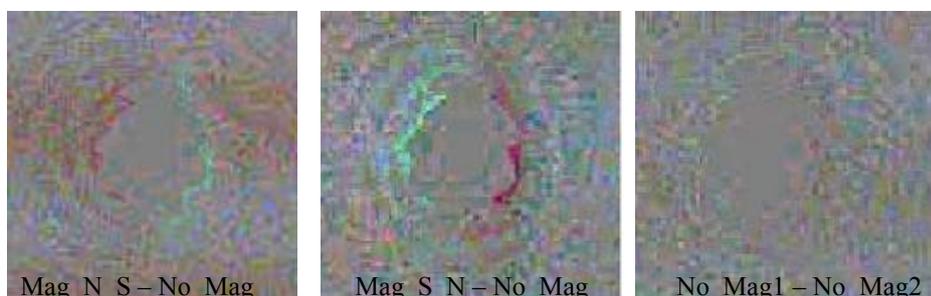
Force is applied on moving charge in presence of magnetic current, which can be explained using Bernoulli's theorem. Assume charge is moving in x direction and magnetic current is applied in y direction. The moving charge generates torque on ether in x direction, which changes the magnitude of magnetic currents in z direction, increasing it on one side and decreasing on the other.. This difference in magnetic current generates thrust (force) on moving charge in z direction.

3.3 The Laser Drift Experiment:

A laser beam was shot on the screen and images were captured by camera with laser beam passing and not passing through the 2m long magnet.



As shown in figures, and it was found (by image subtraction) that the laser beam spot was drifted by approx. 0.1 mm.



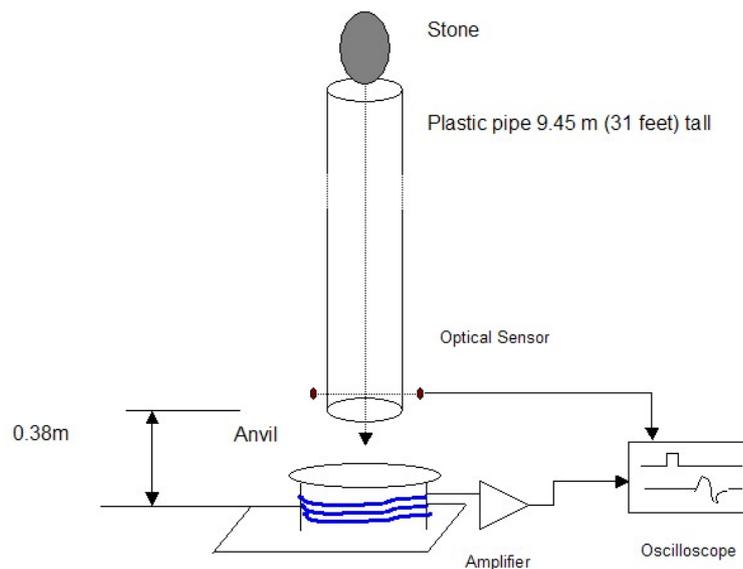
Let us assume that magnetism is flow of ether and electro-magnetic waves are transverse wave propagation in ether. Then this experiment should show some drift in laser beam while passing through magnet. It is similar to crossing a river by a boat and we find some drift in crossing the river. This drift is dependent upon both speed of boat and water flow.

This experiment showed positive results. Light drifts along the magnetic current (in the same direction), which validates that Magnetism is flow of ether. The velocity of Ether was computed as 16 Km/s (approx) for 3000 Gauss flux density considering 0.1 mm drift in 2 m long magnet. This gives an estimation that 1 gauss magnetic current density is approximately equivalent to 5 m/s drift velocity of ether.

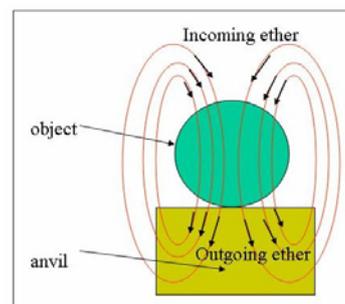
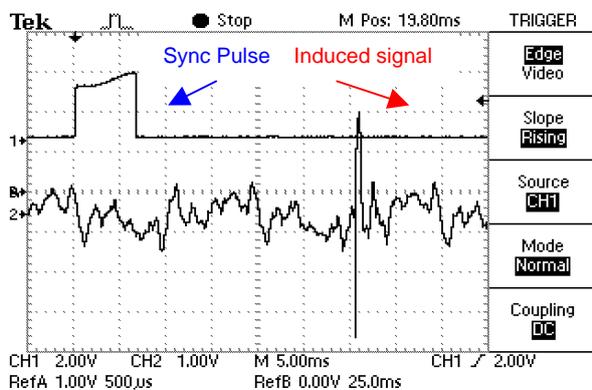
This drift velocity is further used to estimate the density of ether by equating energy stored in an inductor and energy in the form of magnetic current as fluid flow.

3.4 The Stone Impact Experiment:

When the free falling stone impacts the wooden anvil, there is a voltage pulse induced in the coil. The impact of the stone is a sudden deceleration. This causes leakage of ether associated with stone and generates instantaneous magnetic current loops, which induces the voltage pulse in the coil. This establishes a link between magnetism and inertia.



Ether associated with the object moves or drags with the object. However, there is a relative motion between the object and its associated ether during acceleration or deceleration process.



The ether coming out from the object contains significant energy in from of flow at atomic scale due to magnetic moment of orbital electrons, while the ether incoming the object to fill the gap

contains no energy. Therefore, outgoing ether releases its energy in surrounding ether, while the incoming ether regains energy. This energy transfer is responsible for inertia, which is based on eddy-current damping at atomic scale due to magnetic induction.

3.5 Magnetic Induction and Synchronization in the matter:

It is important to note that electrons moving in orbits generate significant magnetic currents and magnetic induction, which keeps the electrons synchronized in the orbits. This synchronization is possible at fundamental, harmonics or sub-harmonics. When the orbital electron gains additional energy, it can go to higher orbit and re-synchronize at next possible frequency. Therefore all objects contain significant energy in the form of magnetic currents at atomic level. Also, magnetic induction at atomic scale is responsible for mutual couplings and synchronization in the matter.

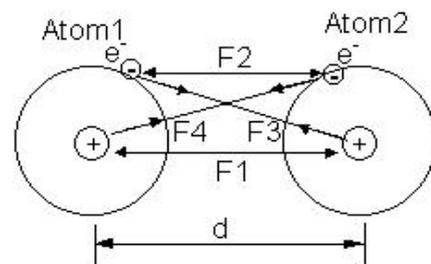
3.6 About Gravitation:

Consider two Hydrogen atoms placed at distance d . The electro-static force between both atoms is resultant of F_1 , F_2 , F_3 and F_4 . However, this computation requires at least 100 digit precision as two forces are positive and two are negative, which makes resultant force very small. This is reason that gravitational force is very small (10^{-36} times approx) compare to electrostatic force.

The resultant electrostatic force

$$F_e = F_3 + F_4 - F_1 - F_2$$

This resultant force F_e is the electric force vector of Gravitational force.



The force F_1 is negative force which is constant at distance d is minimum, while remaining 3 forces are higher as these contain ripples. It can be proved that RMS is always greater than or equal to average. Therefore, the resultant force F_e can not be zero.

Similarly a resultant force F_m can be estimated which is the magnetic force vector of Gravitational force.

Then, Gravitational Force $F_g = F_e + F_m$

The probability of finding an electron in spherical co-ordinates is non-uniform and changes significantly with distance due to magnetic induction and synchronization, which effects the resultant force F_g . The magnetic induction generated by one object can effect synchronization of the other object. When the distance between two objects is small, the effect of synchronization is higher due to the magnetic induction, which makes non-uniform probability of electrons in orbit. The result is reduction in kinetic energy and energy of magnetic moment of orbital electrons in the objects. This decrease in energy is the change in Gravitational Potential Energy. The coupling between two objects is complex magnetic induction, which is Gravitational field. This complex magnetic induction is inversely proportional to distance between objects. Therefore, the effect of this induction is lower at higher distances, probability of electrons in orbit is more uniform, and energy of orbital electrons is higher which is a measure of gravitational potential energy.

3.7 Similarity between Electricity, Magnetism and Gravitation:

Electricity, magnetism and gravitation have certain similarity. In electricity, we consider electric field “E” and electric current “I”. Electric voltage “V” and electric current density “j” can be derived from E and I. Similarly, in magnetism, we have two parameters “H” and “Φ”, which are magnetic voltage and magnetic current. Magnetic field and magnetic current density “B” can be derived from H and Φ. Similarly we have gravitation field “g”. An object or fluid moving due to the gravitation field can be considered as a current induced due to gravity. One example is water flow in a river at constant velocity. This flow is initiated due to gravitation field and

then attains constant velocity due to viscosity and friction. This explains that **both field and flow** are applicable in electricity, magnetism and gravitation.

Field has no meaning unless it can apply force on some particle or matter. Electric field can apply force on charged particles like electron and proton. Gravitational field applies force on all bodies. Similarly, magnetic field applies force or torque on ether.

For work done or energy, it is essential to have both force and displacement. In case of electrical energy, the charge particle experience force and moves. In gravitational energy, the objects experience force and move or flow. Similarly, in magnetic energy, ether experiences force or torque and flows.

3.8 Ether and relativity:

Michelson Morley experiment showed negative result for absolute stationary ether. This led to two possibilities. One possible explanation was that ether was moving with earth while the second was to neglect existence of ether. Einstein announced his theory of relativity in 1905 and he commented “ether is superfluous”. It was easy for scientists at that time to neglect the existence of ether which was incorrect.

Einstein’s principles of relativity are true, and can be explained keeping existence of ether. Most of the phenomena of EM waves are similar to sound waves in air or other wave propagation in fluids. For example, reflection, refraction, diffraction and Doppler effect can be verified in both sound waves and EM waves.

However, Einstein theory that nothing can travel faster than speed of light is not true. An aircraft can fly in air below and above speed of sound waves. However, it is very difficult to fly at exactly speed of sound wave (one mach speed) because the amplitude of vibration increases to significantly high level due to very little damping of wave propagation in air. Similar phenomenon can happen if an object attains speed of light. Ether has zero damping, therefore amplitude of vibration will try to reach to infinity which is impossible. However, a fast accelerating particle can cross the barrier of speed of light similar to aircrafts flying at higher mach speeds. Lorentz transformation equations and length contraction equation clearly shows that damping in ether is zero.

The factor used in relativity γ is presently expressed as $\gamma = (1 - v^2/c^2)^{-1/2}$ which needs modification. It is applicable only if $v < c$ and steady state conditions are achieved.

4. Concepts used in Gravity Motor:

Based on the earlier mentioned theories, an apparatus can be designed to generate thrust in space by taking reaction from ether without using reaction mass.

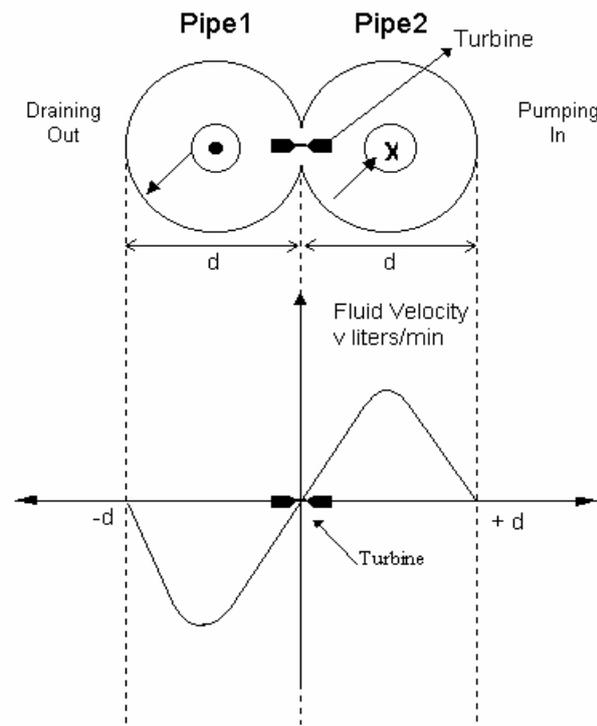
There is no viscosity in ether under normal conditions therefore magnetic current flows continuously without any external force. It is similar to electric current in super-conductors or due to motion of orbital electrons without any power consumption. The superconductivity fails at higher temperature and electrical energy dissipates in the resistance of conductor. Similarly, high vibrations in ether can introduce resistance in flow of ether or in magnetic current. This is the possible way to increase drag in flow of ether.

Equal and opposite charge can have zero resultant but equal and opposite current can not have zero resultant. It is equivalent to two separate fields in opposite direction but still it is not zero field. Equal and opposite currents generate torque or moment of magnetic flux between the currents. As an example assume a water tank with two pipes connected to two pumps. One pump is draining water at v liters/ min while second is filling water at same rate of v liters/ min. There is no resultant water flow but physically the water is flowing in two pipes at v liters/ min.

To explain this better assume that the pipes are connected [open] to each other at the line of their contact. If we place a small turbine with its center at the point of contact, the turbine will actually start rotating due to the torsional force exerted by the fluid. Refer Fig to visualize the turbine and study the profile of the velocity of the fluid flow. However, there is no activity if we visualize from a longer distance.

Electric current flow is similar to the water flow as described above, and the magnetic field is produced by flow of current which is physical movement of charge. Thus, the dipole charges in the dielectric between the conductors experience a torque due to the impulse of equal and opposite current [current dipole].

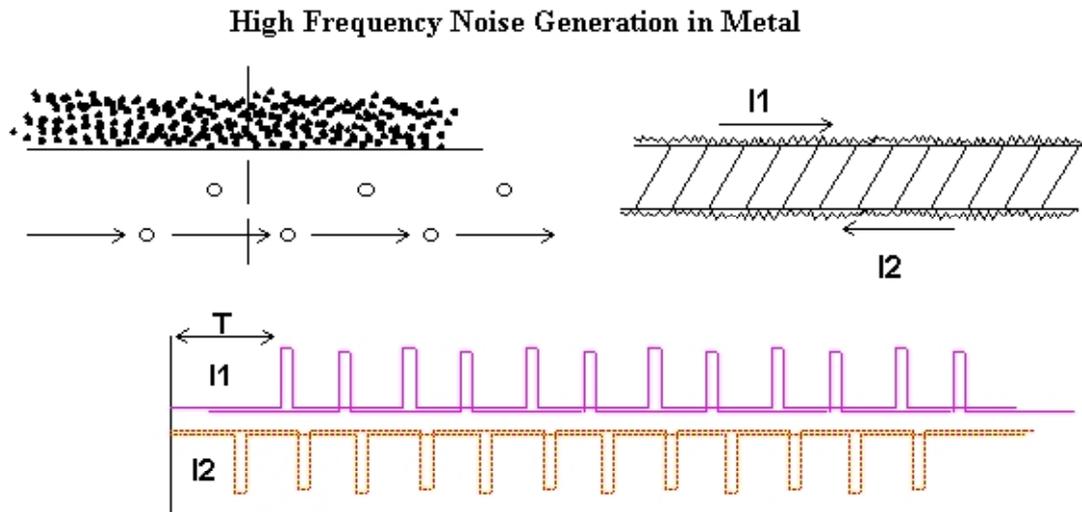
If two conductors are very close to each other and have equal but opposite current flows then we observe something only when we come very close. At the central line between the two conductors we have magnetic flux going into or out of the plane on which the conductors are placed. This generates torque on the charge dipoles.



Equal and opposite currents generate torque or moment of magnetic flux between the currents. The current flow is quantized, and current flow in thin conductor is very different from current flow in thick circular conductor.

Therefore current flow in thin conductor generates high frequency broadband noise, which can generate high frequency vibrations in ether.

GaAs diode (LED) generates light, Gun diode generates microwave, some LEDs generate laser also by flow of DC current because the current flow is quantized. Similarly current flow in thin conductor generates high frequency broadband noise.



Let us try to observe the instantaneous current as shown in Fig above. If the current is low, then the electron hopping is slow. If the current is high, then the electron hopping is high.

Each jump acts as a current spike and many hopping take place. Thus, it appears like many spikes over the time scale. Hence, low current would imply low frequency signal and high current would imply high frequency signal.

Rotary motion is equivalent to Sinusoidal vibration in two axes with 90 degrees phase shift. Similarly, rotary motion in spherical co-ordinates is equivalent to sinusoidal vibrations in three axes. Therefore, vibration of charge dipole in one axis is equivalent to one component of orbital electron motion in that axis. As explained earlier, gravity is generated by motion of electron in orbit, which is equivalent to Sinusoidal vibration of charge dipole in three axes.

Therefore, a combination of magnetic flux, velocity, and vibration in ether can generate force in space by taking reaction from ether. This force is similar to gravitational force.

- In magnetic circuit, two magnets experiences forces on each other depending upon polarity of magnetic flux. This can be considered as **magneto-static**.
- If magnetic flux is changing, or there is a relative velocity, then we have induced electric field (magnetic induction). Similarly, other properties of magnetism or Maxwell equations can be considered as magneto-dynamics or **electro-dynamics**.
- If there is moving and vibrating magnetic current, then it can generate thrust in ether. This is similar to thrust in air and thrust on propeller in aerodynamics. The effect of moving and vibrating magnetic current can be considered as a part of **Ether-Mechanics**.

All the prototypes of Gravity motor are based on Ether Mechanics.

5. Possibilities in ether mechanics:

5.1 Vibration and Temperature:

Particle vibration and temperature are interrelated. Inter-atomic vibrations are related to temperature of matter and increase in dimensions is related to these vibrations. There are many more examples to describe that increase in temperature is related to increase in vibration level. Therefore, the vibration level in ether can be used as a measure of temperature of ether. High vibrations can be injected in ether to effectively increase temperature of ether.

5.2 Different behaviors with Vibrations:

Longitudinal vibration (LV) has one conceptual difference from Transverse vibration (TV) or wave propagation. The TV is symmetrical w.r.t. axis of wave propagation, while LV is un-symmetrical. The low frequency LV can be considered as reversible fluid flow. The flow away from source is like exhaust and flow towards source is like suction. The suction follows shortest path and does not go long in straight line, while exhaust follows straight line and goes longer. The flow can not travel at longer distance but LV can travel to longer distance. So LV can generate thrust.

- Vibration reduces friction to zero. Example- stones transportation and sorting in inclined vibrating meshes.
- Non-linear vibration generates thrust. Example- coin on vibrating surface is lifted if acceleration is higher than 1 g.
- Vibration perpendicular to the flow increases drag in flow.

Consider a wire mesh placed perpendicular to air flow. It will introduce a little drag on air flow. Now, apply vibration perpendicular to air flow keeping particle velocity significantly higher than speed of air flow and displacement greater than pitch of wire mesh. In this condition, the wire mesh will interact more with air flow and drag on air flow will be increased.

Therefore, **combined effect of Vibration and flow is far different from only vibration or flow.**

Ether has very high bulk modulus. Hence, it is difficult to obtain linear flow in ether. It can be seen in magnetic currents that they follow shortest curly path.

5.3 Barrier in traveling at speed of wave propagation:

As an airplane approaches the speed of sound (1 mach), shock waves build up, increase in drag, lose of lift, and lose of control. It was considered as sound barrier. Once the airplane crosses the sound barrier, the flight is smooth. Same phenomenon is applicable when a particle approaches speed of light. We can name the ratio of particle speed to speed of light as `light_mach` similar to mach used with air travel. Any fast accelerating particle can cross the barrier of one `light_mach`.

6. Gravity Motor (Thrust Generator)

The prototype development was started in 1997 based on design-1 and it was continued till July 2000. Due to many engineering limitations in design-1, work was continued on other designs. Presently the prototypes based on design-7 are under development. Both design-7 and design-1 are discussed here.

6.1 About Design-7 Prototype:

The latest prototype D7P4 is based on a circular magnetic disk mounted on the shaft of 12 pole BLDC motor. A coil assembly is placed in front of this magnetic disk which contains pair of coils which are closely wound to have sufficient capacitance and good mutual coupling. The coil assembly is stationary while the magnetic disk is rotating. Voltages are applied between pair of coils to orient the dipole charge. Equal and opposite current pulses are applied in coils to introduce desired vibrations in ether.

When the current pulses are applied, the flow of ether (magnetic current) of magnetic disk is restricted in front of coil assembly, which generates thrust by taking reaction from ether.

Magnetic current from the magnetic disk has non-uniformly distribution of ether flow. Rotation of disk has velocity perpendicular to magnetic current and it makes more uniform flow of ether in the form of magnetic currents. Vibrating charge dipoles among coils introduce transient vibrations in the magnetic currents. The amplitude of these vibrations increases as the magnetic currents cross the coils and interference occurs just after the coils assembly. This creates a barrier after the coil assembly and magnetic currents are restricted by this barrier, which generates thrust on the disk by taking reaction from this barrier.

It is necessary to establish synchronization between rotation of magnetic disk and current pulses. This is achieved by a DSP based electronic module, which ensures necessary synchronization in case of speed and load fluctuation.

Expected that the prototype D7P4 will show weight change of 40 gram (0.5%). These prototypes prove the concept, and the major scope of work remaining is Product Engineering to improve the weight changes up to 150 %. It is a long way ahead but possible.

Parameters:

BLDC Motor:

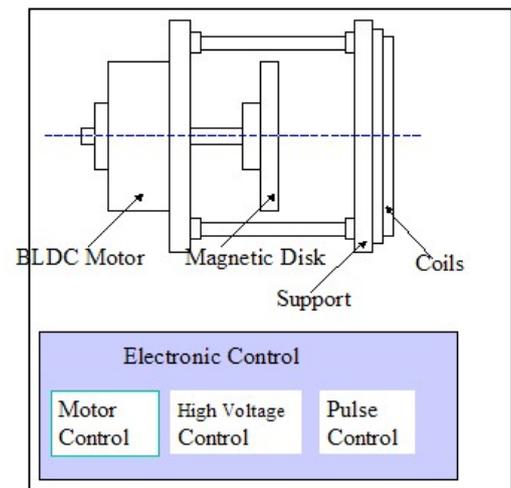
Torque	1 Nm
Speed	3000 rpm
Sensors	3 Hall effect sensors

Magnetic Disk:

Disk diameter	150 mm
Flux density at surface	200 gauss
Magnet type	NdFeB N27SH

Coil Assembly:

Winding resistance AB	20.6 ohm
Winding resistance CD	20.5 ohm
Inductance AB	3.6 mH



Inductance CD	3.6 mH
Inductance AB at CD short circuit	3.2 mH
Capacitance AC	101 nF
<u>Electronic module:</u>	
DSP	BF533 from Analog Devices Inc

Pulse output voltage	24V ON, 100V flyback
Pulse freq.	4 to 12 KHz
Motor speed	1400 to 2800 rpm
Power source	24V DC

Test results:

Expected test results are described as below.

Apparatus weight	8 kg
Weight change	40 gram
% weight change	0.5 %

Power consumption	
(i) at pulse on	250 W
(ii) at pulse OFF	60W

6.2 About Design-1 Prototypes:

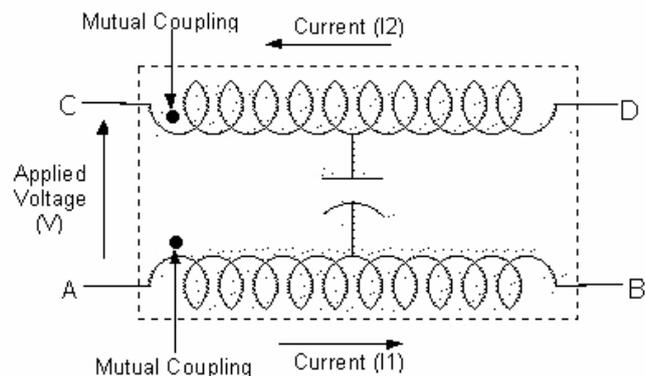
This design (Design-1) was quite unreliable from engineering point of view. Major problems in this design were deformation of capacito-inductor (CI) by centrifugal force, concentricity of CI w.r.t. axis of rotation, slip rings failure and winding problem of CI (without clean room). However, this design showed positive results.

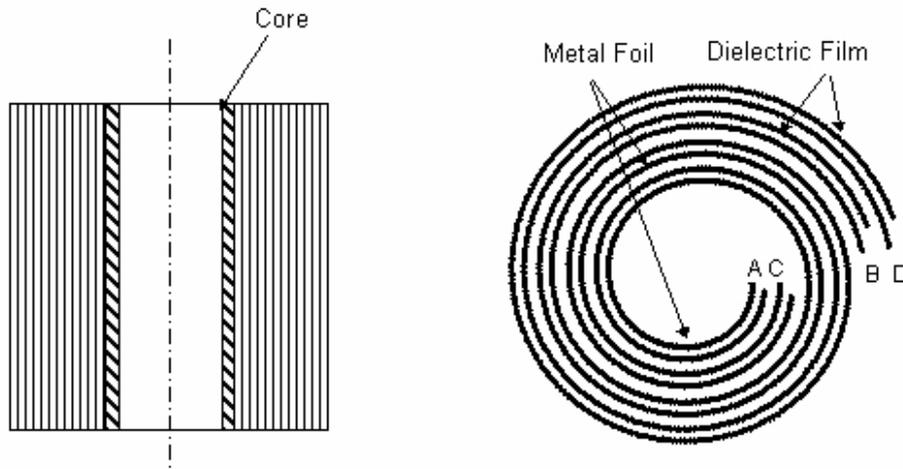
It makes use of the newly invented electric component Capacito-Inductor which is a **four** terminal device and generates combined effect of capacitance and inductance. In effect, the Capacito-Inductor is the heart of the Gravity Motor.

Voltage applied on Capacito-Inductor orients charge dipole in dielectric, impulse currents generate vibrations in charge dipole. Rotation of Capacito-Inductor in presence of radial and tangential magnetic field generates axial gravitation field.

Symbolic representation of a Capacito-Inductor:

It is a four terminal device A , B, C and D which offers inductance L between A to B and C to D as shown in Fig. It also has sufficient capacitance between A to C or B to D. Its inductance is very small at A to C when B and D are shorted. It is used as the main component for generating Gravitational force.



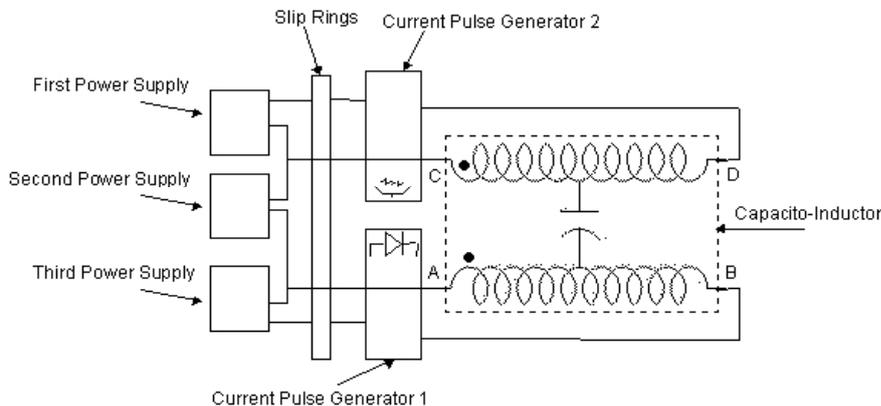


It is a four-layer device with metal foil – dielectric film – metal foil – dielectric film, wound on a cylindrical core. The first layer of the metal film is having its ends as the two terminals of the device i.e. A and B while the

second layer of metal has its ends as other two terminals of the device i.e. C and D. These two metal layers have dielectric film layers in between as shown in Fig.

Interconnections of the Apparatus:

- First Power Supply to feed power to PCB for current pulse generator 2.
- Second Power Supply to apply high voltage V on Capacito-Inductor.
- Third Power Supply to feed power to PCB for current pulse generator 1.
- Slip-rings to transfer power to rotating PCB.
- Current Pulse Generator 2 to generate current pulses I_2 .
- Current Pulse Generator 1 to generate current pulses I_1 .



The Voltage is applied at the terminal A & C of the Capacito-Inductor through the power supply. Equal and opposite current pulses are applied at the terminals A-B and C-D of the Capacito-Inductor with the help of two Current pulse generators respectively. These two current pulse generators are opto-coupled to generate almost equal and opposite current pulses.

The second current pulse generator can be eliminated by short circuiting the terminals C & D. In this case due to high mutual inductance between the two coils A-B and C-D almost

equal and opposite current is generated in both the coils with only one current pulse generator.

Description of the prototype:

The heart of the gravity motor is a four-layer device with metal – dielectric – metal – dielectric wound on an insulating cylindrical core. It is a four terminal device A, B, C and D which offers inductance L between A to B and C to D. It also has sufficient capacitance between A to C or B to D. However its inductance is very small at A to C when B and D are shorted. It has been titled as Capacito-Inductor. It is placed between a magnetic circuit of permanent magnet which creates radial magnetic field. When the Capacito-Inductor is rotated at high speed, voltage is applied between A and C, opposite current (dipole current) pulses are applied on A - B and C - D, it generates axial gravitational field. A PMSM used to rotate the Capacito-Inductor is operated with the help of a separate Electronic controller.

The applied voltage orients charge dipole inside dielectric in radial direction with negative and positive charge towards axis of rotation in alternate layers of dielectric. The current dipole pulses generate vibration in charge dipole, and rotation of vibrating charge dipole generates gravitational force.

Test results of Prototype Gravity Motors:

Prototype P14 [12May, 2000]

ID=62 mm, OD=120 mm, 25 um Polyester, 4.5um Aluminum, N=453

$R_{AB}=6.3E$, $C=32 \mu F$

Weight of Prototype = 10 Kg

Deflection sensitivity of test stand = 17 gram/ mm

Rotation speed = 2800 to 2900 RPM

Current pulses of peak current 6 A approx., Radial magnetic field is applied

DC Voltage between A and C = 0 to 700 V

Speed (RPM)	0	2500	2860	3100
Pointer (mm)	151	151	152	152

Voltage (DC)	0	750	0	750
Pointer (mm)	151	151.5 to 152	151	151.5

This shows 0.5 mm deflection in the direction of weight decrease which is equivalent to 0.05% weight reduction (i.e. 8.5 GRAMS WEIGHT LOSS)

After 5 minutes of trials the deflection started reducing and within 3 to 4 hours of trials it reached to almost zero.

Prototype P24 [17 July, 2000]

ID=62 mm, OD=200 mm, 15 um Polyester, 6um Aluminum, N=1760

$R_{AB}=30E$, $L_{AB}=0.256 H$, Capacitance is not measurable correctly by simple capacitance meter because of high inductance.

Weight of Prototype = 18.9 Kg

Deflection sensitivity of test stand = 35 gram/ mm

Rotation speed = 800 to 2000 RPM

Current pulses of peak current 2.5 A approx., Radial magnetic field is applied
DC Voltage between A and C = 0 to 100 V

Deflection due to weight reduction = 0.4 to 0.5 mm (i.e. 14 GRAMS WEIGHT LOSS)

The deflection was reduced to 0.3 mm after trials of one day and then the prototype got damaged at 150 V DC. However it showed a weight reduction of 0.05%.

This design was covered by US patent application.



US 20020018333A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0018333 A1**
Goel (43) **Pub. Date: Feb. 14, 2002**

(54) **APPARATUS AND METHOD FOR
GENERATING GRAVITATIONAL
FORCE/GRAVITATIONAL FIELD**

(52) **U.S. Cl. 361/143**

(57) **ABSTRACT**

(76) **Inventor: Rakesh Goel, Roorkee (IN)**

There is disclosed an apparatus for generating gravitational

7. More details on theory:

About Gravitation:

The origin of Gravitation has been explained using a Hydrogen atom for sake of simplicity. However, the theory can be extended for all the elements.

We know that the gravitational force is significantly weak (10^{-36}) compare to Electrostatic Force. This was used as a starting point. If we calculate the Electrostatic force between two hydrogen atoms placed at sufficient distance (say 1 m) and try to compute the Resultant Force then we may get an answer. However we need to consider the distance between the atoms ' d ' and radius of atom ' r ' at high precision. If we neglect ' r ' in comparison to ' d ' then the resultant force will be Zero because effect of one atom on electron and proton of other atom will be same. However it leads to a problem that we need a Higher Language Software of math with very high accuracy.

As explained earlier.

The resultant electrostatic force is given as:

$$F_e = F_3 + F_4 - F_1 - F_2$$

This resultant force F_e is nothing but the electric force vector of Gravitational force. Similarly a resultant force F_m can be estimated which is the magnetic force vector of Gravitational force.

Gravitational Force, $F_g = F_e + F_m$

The probability of finding an electron in spherical co-ordinates is not uniform and changes significantly with distance, which effects the resultant force F_e . The probability of finding the electron is dependent on force applied on it, and the resultant force is dependent on its position.

The average value of resultant force F_e is not ZERO and is positive in all elements of matter. It was solved with certain assumptions for distance between atoms (d) ranging from 10^{-6} m to 10^7 m by a custom built software of mathematical accuracy greater than 200 digits. It was observed that the answer was never zero.

In many references, this force is designated/ referred to as atomic bonding, inter-atomic force, inter-molecular force etc. However, no reference has been able to explain this force at larger distances. Also this force is significantly larger than Gravitational force at 10^{-9} m, as specified in many references, and zero at larger distances which indicates that this force will be equal to Gravitational force at a particular distance, but it was not found solved for that particular distance in any reference to the best of our knowledge.

A simple analogy is that if we have a voltage source of 1000 V DC and another source of 1000V DC having a ripple of ± 1 volt then average voltage of both the sources will be 1000 V. However, the RMS voltage in second source will be more than the first source and difference of these two voltage sources will not be zero. The RMS Value is greater or equal to Average Value. Therefore, the resultant force F_e will not be zero even at higher distances.

Only four positions of electron in each atom are considered for simplicity of calculation.

Total number of positions or combinations are $4 * 4 = 16$

The probability is modified at 4 positions to match the gravitational force in which its value is assumed different compared to remaining positions. Average Probability of finding electron is $1/16$ (0.0625) which is applicable at remaining 12 positions.

Sample output of forces F_1 to F_4 and F_e at one set of electron positions from 255 digit fixed point Math Software.

Similarly in case of Gravitation, Potential Energy (PE) increases equal to the work done in going upward and decreases equal to work output in going downward.

Assume an object of mass 1 Kg is moved from earth surface to deep in space (say infinity). The energy required is equal to $\frac{1}{2}mv^2$ where v is approximately escape velocity.

$$E_1 = \frac{1}{2} * 1 * (11 * 10^3)^2 \quad \text{Watt}$$
$$= 16.8 \text{ kWh}$$

This is converted into Potential Energy and it can be converted back into work output when the object is carried back to earth surface.

It is mentioned above that the probability of finding the electron in spherical co-ordinates varies with distance or height. Its variations are more at shorter distances, which means that motion of electron is more restricted at shorter distances. This reduces the Kinetic Energy of electrons at shorter distances. As the distance between atoms is increased, the kinetic energy of electrons is also increased because of more uniform probability of finding the electron. The difference in KE of electrons at different distances between atoms is the Gravitational Potential Energy.

The electron tends to avoid a path where it experiences a force of repulsion and tends to take a path where it experiences a force of attraction. When the mass is at some height i.e. distance between atoms is more, the overall velocity of electron increases and thus there is an effective increase in the KE of the electron which accounts for the Gravitational PE.

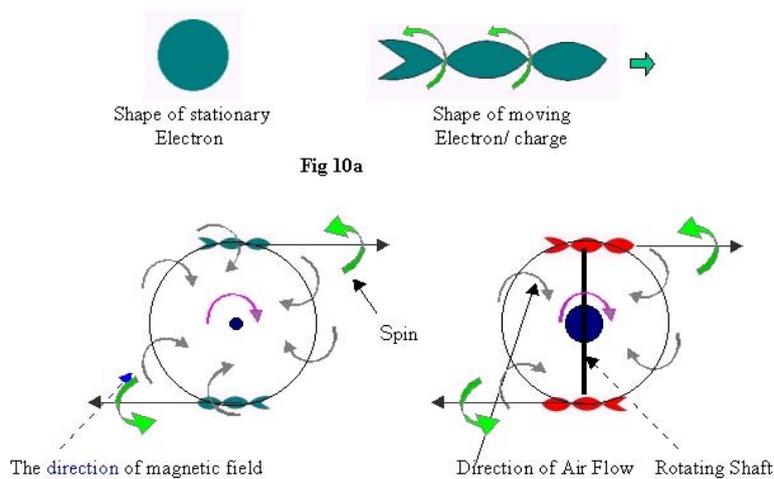
It is shown that the resultant force F_g is always positive (force of attraction). The first force between proton to proton is minimum, because there is no movement in their positions. Hence RMS and average value of this force

will be same. While other three forces are higher. However the probability of finding electron at different positions are non uniform. This makes resultant force F_g always positive thus it is a force of attraction.

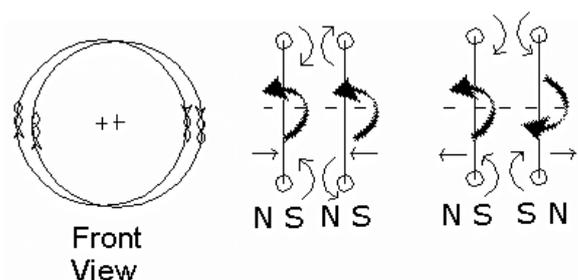
If we have a material having negative charge at nucleus and positron in orbit then we can name it as anti-matter. The matter and anti-matter will repel according to above explanation. This can be one reason that such anti-matter does not exist.

About magnetism:

Ether interacts with moving charge as mentioned earlier. Its interaction with ether (M4) is similar to friction between a solid and air. Therefore moving electron generates a circular flow in M4, and electron spins in opposite direction as a reaction force. This circular flow of M4 is the magnetic field.



An electron moving in circular path generates magnetic currents as shown in figure. This can be simulated mechanically also. Replace the electrons by two propellers shaped like the moving electron which are free to rotate along their axes. These propellers are rotated with the help of a mechanical shaft.. Then the air flows in the same direction as the M4 flow in case of charge movement.



When the charge are rotating in the same direction, they experience a force of attraction which explains why unlike poles attract each other. In between these electron pairs, very less or no M4 flows and thus there is a low pressure between the two pairs, which causes them to attract. (Notice the simulated poles as NS and NS).

When the electrons are rotating in the opposite direction, they experience a force of repulsion which explains why like poles repel each other. In between these electron pairs, much M4 flows and thus there is a pressure increase in between the two pairs, which causes them to repel as shown in Fig. Notice the simulated poles as NS and SN.

Therefore, it can be tested on a mechanical model and the air flow would simulate the M4 flow. It is concluded that poles cannot be separated from each other as they are regions of pressure gradient.

Units magnetic current ϕ also indicates relation between magnetic induction and acceleration.

Energy stored in an inductor :

$$E_L = 0.5 * L * I^2 \quad \{ I \text{ is the flow of charge } \}$$

$$= 0.5 * K_1 * \phi^2 \quad \{ \phi \text{ is the flow of M4, } \phi \propto I \}$$

Now, KE is given as:

$$E_{KE} = 0.5 * m * v^2 \quad \text{where } m \text{ is the mass and } v \text{ is the velocity of the object}$$

Comparing these two expressions of E_L and E_{KE} , we conclude:

The inductance L is analogous to mass m which is known commonly, therefore ϕ is analogous to velocity

ϕ is the flow of M4 (meter per second)

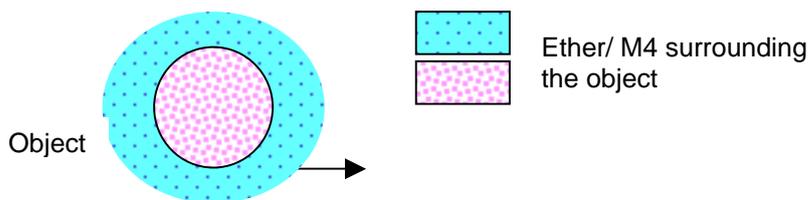
The first derivative of velocity w.r.t time is acceleration, similarly the first derivative of ϕ w.r.t time is also acceleration which is also the unit of gravitational acceleration or g .

$$g = GM/R^2 \quad \text{m/s}^2 \quad \text{which the gravitational force for unit mass}$$

Magnetic flux ϕ is the particle velocity of M4 and magnetic induction $d\phi/dt$ is the particle acceleration of M4. **This gives a starting clue that magnetic Induction, Inertia and gravitation are closely linked.** Also, magnetic induction, effect of inertia and gravitation field are non-shieldable fields because magnetic induction is non-shieldable. However, we can cancel its effect by having equal and opposite magnetic induction vectors.

Explanation of Inertia:

When a body moves at a velocity v , some percentage of M4 also flows with the same velocity in the same direction.



When an object moves with a velocity it makes M4 flow, but not all the M4 covering the volume of the body moves with that velocity, only a certain percentage flows. This depends upon thickness and density of object. Whenever velocity changes, acceleration occurs, the moving M4 with the object leaks from one direction which contains significant energy in the form of magnetic moment of orbital and spinning electron. New ether of almost zero energy fills that space from other side of object and regains energy. This energy transfer is the magnetic induction at atomic scale and is responsible for inertia.

8. More details on experiments:

The Laser Drift Experiment [March , April 2001]

More details of the experiment setup and results are described below. An iron channel was taken. Rare Earth magnets (NdFeB, N27SH) were used and stuck inside the channel for a length of 2m such that on one wall of the channel inside was simulated the North Pole throughout and on the other wall of the channel inside was simulated the South Pole throughout. In effect, it acted as a 2m long Permanent magnet. The field generated was measured as 3000 Gauss.

A special software was coded to carry out the image processing.

Pic45.bmp : Beam passing through free air

Pic46.bmp : Beam passing through magnets

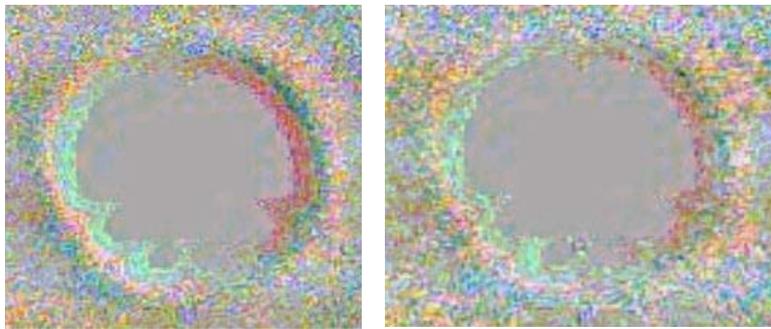
Pic47.bmp : Beam passing through free air

Pic48.bmp : Beam passing through magnets

Pic49.bmp : Beam passing through free air

The following process was carried out:

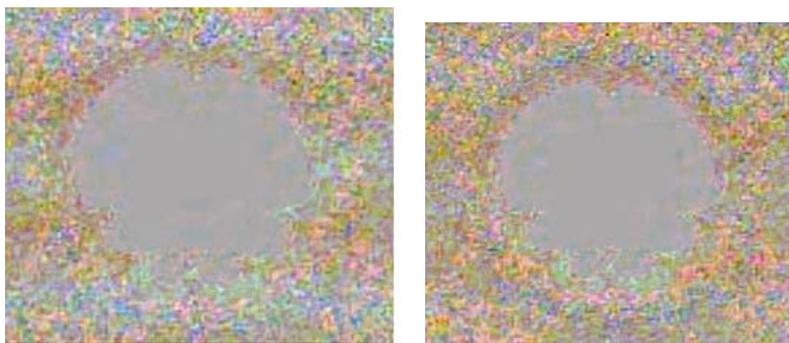
$(Pic_{xx} + Pic45INVERSE) * 2$



$Pic1 = (Pic46 + Pic45INV) * 2$

It is easily seen with the naked eye that the Laser shifts towards the right. Thus you see more red on the right and more green on the left.

$Pic2 = (Pic48 + Pic45INV) * 2$, The same result is again validated



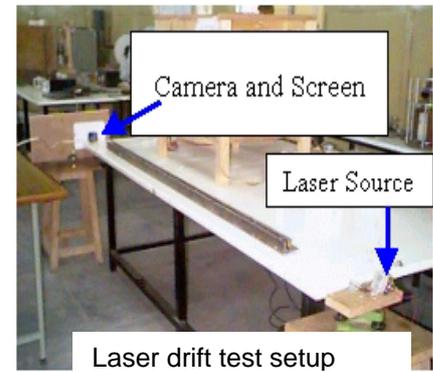
$Pic3 = (Pic47 + Pic45INV) * 2$, It shows no shift as magnets are absent.

$Pic4 = (Pic49 + Pic45INV) * 2$, It again shows no shift as magnets are absent.

This also shows that only a part of the light shifts (not 100 %) because Magnetic Field is turbulent flow of M4 and it does not cover 100 % path of Laser Beam at 3000 Gauss Flux Density.

Important Note:

1. The white light which is focused on the screen should be flicker free i.e. it should be operated from a ripple free DC source. The Intensity should be optimum, hence few trials may be required for best readings.
2. The Camera should be of best input resolution so that the video signal does not saturate.



Scope of future work:

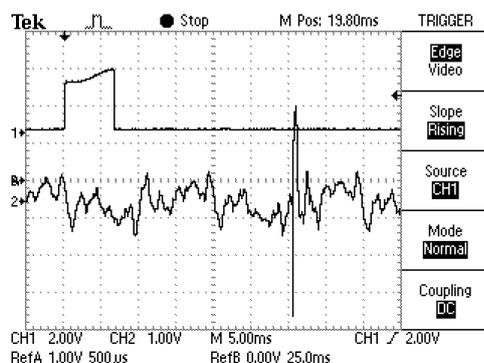
The Laser Drift Experiment should be re-conducted in strong magnetic field (preferably 10000 gauss) and also complete assembly should be placed in vacuum.

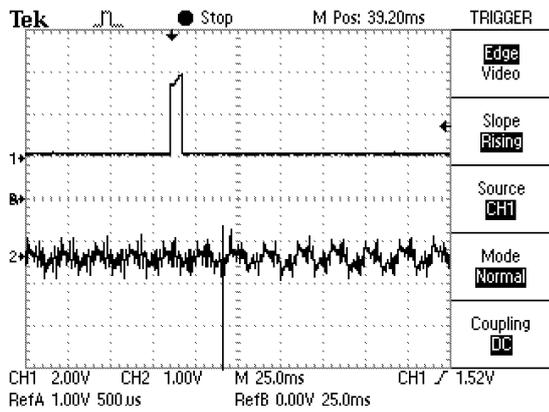
The Stone Impact Experiment [May , June 2001]

The setup and more results are described here. A hard plastic pipe 9.45 metres (31 feet) long was mounted well with supports as shown in Fig 7.1. The pipe ended just around a feet above the wooden core approximately. A coil connected via an amplifier to the second channel of a 2 channel Digital Scope. This coil is placed on a sponge disc on the ground to isolate vibrations. This coil has a larger diameter than the pipe to provide sufficient clearance during the stone impact. A wooden cylinder is placed at the center of the coil which acts as an anvil so that the stone impacts upon the wood. An optical sensor is connected to Channel 1 of the Digital Scope. The sensor is placed above the coil to deliver a Synchronizing pulse (SYNC) for the scope.

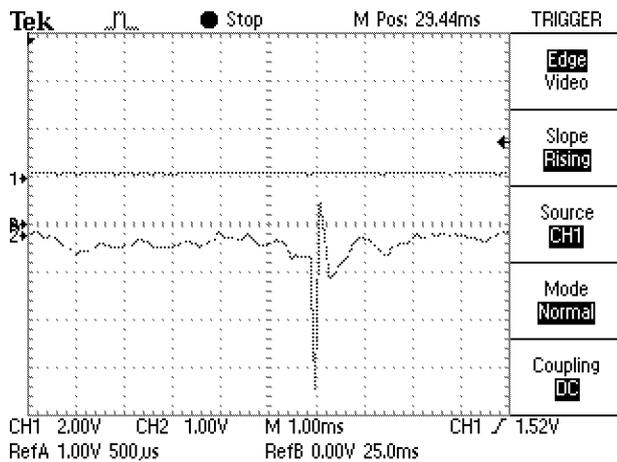
A stone is dropped from the top of the pipe. The stone has a smaller diameter than the pipe so that it does not interfere or drag against the inner walls of the pipe. Before striking the wooden anvil, the stone first crosses the optical sensor giving SYNC and then impacts the anvil within the coil area. The impact of the stone generates high retardation and a signal is induced in the coil.

The experiment has been conducted to validate whether the induced signal is related to the impact or is the induced signal zero. If the signal is not zero, this indicates that an EMF has been induced in the coil by applying high acceleration/ retardation of an object (stone). It was observed that an EMF has been induced in the coil and the induced signal has been displayed on the Channel 2 of the Scope. Each picture shows the SYNC pulse from the Optical Sensor when the stone passes it and a signal on Channel 2 after striking the anvil within the coil.





05064944.bmp, Weight of stone 870 grams, Polarity of coil Reversed



expanded view of the induced signal

Note: The noise seen in Channel 2 induced signal is from the 50 Hz mains

Inferences:

Velocity just before impact

$$h = 32' 3'' = 9.75 \text{ m} + 0.0762 \text{ m} = 9.83 \text{ m}$$

$$v = 13.88 \text{ m/s}$$

It is found that the Channel 2 signal seen on the scope is average 4V peak and having a pulse duration of 1 ms average. Thus $dt = 0.5 \text{ ms}$. The amplifier before the scope has a gain of 100. The incoming input signal to the amplifier from the coil is 40 mV peak.

The same coil was used now referred to as secondary coil (Secondary Coil L2). In the inner empty space of the coil another coil was placed which is referred to as Primary Coil (Primary Coil L1) which has 8.5 cm diameter which is close to the value of the stone diameter.

The Primary Coil L1 is placed within the Secondary Coil L2 as shown in Fig 7.9 with a suitable current limiting resistor in series with the Primary Coil L1 and excited by DC current of 333 mA. The magnetic flux density measured on Primary Coil L1, axially, was found to 6.5 Gauss approximately.

Thereafter, a half Sine Pulse was fed to Primary Coil L1 and similar pulse was induced in Secondary Coil L2 (similar to that after the stone impact). The current measured in the Primary Coil L1 was 3 mA approx. to induce similar pulse.

The upper trace in Figures 7.10 and 7.11 shows the input to the Primary Coil L1 and the lower trace shows the signal induced in the Secondary Coil L2.

It is measured that the current pulse of 3 mA induces signal in the Secondary Coil L2 similar to the signal generated by stone impact.

Proportionately, for 3 mA, the magnetic flux density in L1 would be

$$B = 6.5 * (3 / 333) = 0.059 \text{ gauss}$$

$$\begin{aligned} \phi &= A * B \text{ Wb} \\ &= 0.000336 \text{ Wb} \end{aligned}$$

$$d\phi / dt = 0.000336 \text{ Wb} / 0.5 \text{ ms (An impact will generate a similar duration pulse, generally)}$$

$$= 0.672 \text{ Wb/s}$$

As calculated above, the velocity just before the impact is 13.88 m/s. This is suddenly reduced to zero due to the impact in approx. 500 us.

$$\begin{aligned} a &= 27760 \text{ m/s}^2 \\ &= 2832 \text{ g} \end{aligned}$$

Thus 2832 g deceleration generates a flux of the order of 0.000336 Wb and the rate of change of flux is of the order of 0.672 Wb/s.

Scope of future work:

The Stone Impact Experiment should be re-conducted with higher free fall, "Pass through the coil" and "Impact on anvil". Also different materials should be used as anvil and object. One accelerometer should also be mounted on side of anvil to compare the timings between induced EMF and retardation.

9. Clues to find out link between forces:

1. The starting point was the existence of ether (M4) based on old Indian Science which explains the existence of matter M4 in the whole universe since last 5000 years. Even Maxwell also initially assumed existence of ether. The equation of velocity of light also indicates the existing of ether.
2. Next step was to define its properties. The EM wave propagates in ether similar to wave propagation in liquid or air, therefore it is assumed that ether acts as a fluid and laws of fluid mechanics are applicable on it.
3. Considering few properties of Magnetism together [a] lines of magnetic flux follow shortest (curly) and close path, [b] its poles can not be separated [c] the unit of magnetic flux ϕ is analogues to velocity, it indicated that magnetism should be flow of ether. Therefore "Laser drift experiment" was designed to prove magnetism as flow of ether.
4. Michelson-Morley experiment showed no relative velocity between ether and earth. This itself proves that most of the ether moves with the moving object.
5. The next interpretation was that if an object is stationery or moving then its associated ether will also be stationery or will move with the velocity of object respectively. However, if an object is accelerating then there can be a relative velocity between object and its associated ether because the associated ether may not pick same velocity and acceleration immediately. This may generate a relative flow of ether nearby an accelerating object. Since the flow of ether is magnetism, there is a possibility to detect magnetic induction near accelerating /decelerating object. Therefore "Stone impact experiment" was designed to prove link between magnetism and inertia.
6. The results of "Laser drift experiment" and "Stone impact experiments" were positive but small in magnitude. This can be explained with the argument that any new phenomenon will give only small signals because all phenomenon having strong signals / results are already discovered.

10. References:

1. The Feynman Lectures on Physics by Feynman, Leighton and Sands; Volumes I, II, III; Eighth reprint; 1995
2. McGraw-Hill Encyclopedia of Science & Technology, 7th Edition
3. Concepts of Modern Physics by Arthur Beiser; Fifth Edition
4. Fundamentals of Physics, Fourth Edition by Halliday, Resnick and J. Walker
5. Fluid Mechanics by Dr. A.K. Jain, Eight Edition, 1998
6. A Text Book of Electrical Technology by B.L. Theraja

Annex-1

Simplicity of Nature:

Nature is simple if we understand it. The link between major forces will be explainable in a simple manner in next few years. However, sometimes simple solutions are missing. The simple method to calculate value of Pi (discovered by author) is an example to indicate this fact which calculates the value of Pi by successive approximation using the properties of equilateral triangle and Pythagoras Theorem.

$$\pi = \text{Circumference/ Diameter}$$

$$= (6 * A1) / (2 * 1)$$

Now $A1 = 1$ as it is a side of the equilateral triangle

First Approximation:

$$\pi = 6 / 2 = 3$$

Second Approximation:

This circle is also having unit radius but divided into know that $A1 = 1$ from the Fig 1 (First approximation)

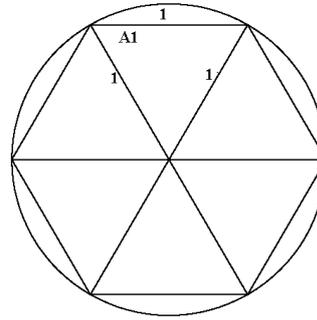


Fig.1

twelve segments. We

$Y1 + Y2 = 1$ where $Y2$, $(A1)/2$ and $A2$ form the sides of a right triangle and so also $Y1$, $(A1)/2$ and 1 form the sides of a larger right triangle. Now the value of $A2$ is calculated as follows:

$$Y1^2 + (A1^2)/4 = 1 ; Y1^2 = 1 - 1/4 ; Y1^2 = 3/4 ; Y1 = 0.8660$$

$$\text{Therefore, } Y2 = 1 - 0.8660 = 0.134$$

$$\text{Further, } A2^2 = ((A1)/2)^2 + Y2^2 = 1/4 + (0.134)^2$$

$$= 0.267956$$

$$A2 = 0.51764466$$

As $\pi = \text{Circumference/ Diameter}$ {The sum of equivalent segments is the approximation of the Circumference where $A2$ is one of the 12 equivalent segments}

$$\pi = (12 * A2) / (2 * 1) = 3.1058541$$

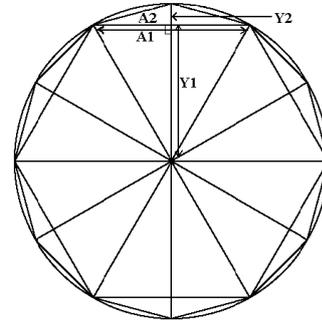


Fig.2

Successive Approximation method

from the Second Approximation:

$$A2 = \sqrt{[(A1)/2]^2 + \{1 - \sqrt{1 - ((A1)/2)^2}\}^2}$$

Generalizing:

$$A(J+1) = \sqrt{[(A(J)/2)^2 + \{1 - \sqrt{1 - (A(J)/2)^2}\}^2]} - [1]$$

$$\text{Thus, } \pi = 2^{(J-1)} * 3 * A(J) \quad \text{-- [2]}$$

where $A(1) = 1$

Results

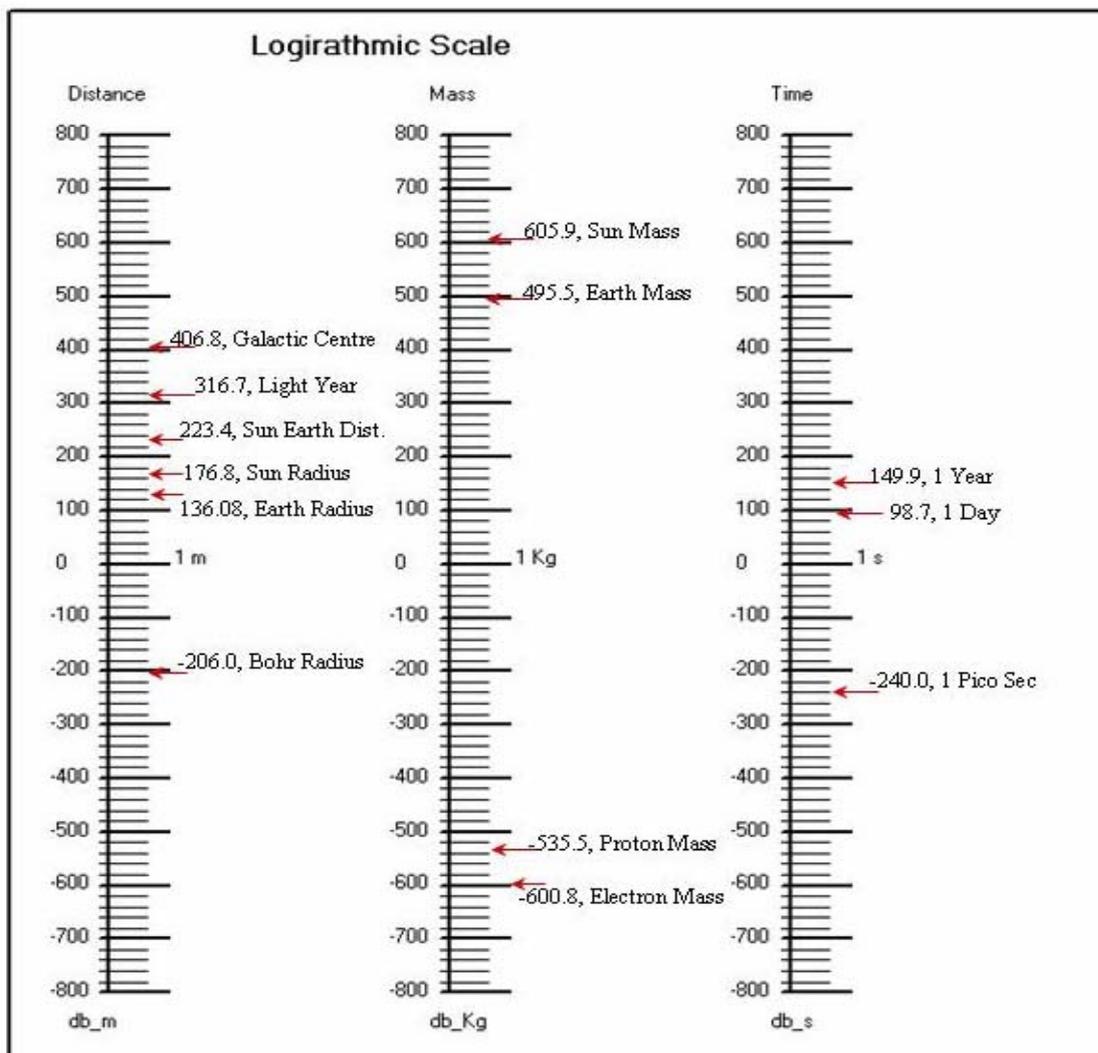
Approx	Value
1	3.0
2	3.1058541
3	3.1326286
----	-----
15	3.1425926530
16	3.1415926534
17	3.1415926535

Annex-2

Using Log scale

The numbers play important role in life be it the numbers we come across in general use or in any scientific research and experiments. The measurements and the results that we get fall in a wide spectrum and range of numbers. From a small value of radius of nucleus of an Atom which is of the order of 1.0×10^{-15} m or a large value of the radius of earth around 6370 Km . For this reason it becomes very hard to visualize the wide spectrum of the values, same is the case with other quantities in measurement such as Mass, Time, Frequency etc. Human mind can easily visualize numbers within ± 1000 , but difficult to visualize the exponent values.

Generally used db scale is good for exponent of the order of ± 40 which can cover most of the values. The value of 0 db is 1 which can be considered as normalized value in that unit. As db scale is already used, we can use notation db_m, db_kg, db_s for length, mass and time respectively. Similarly, we can use notation of db_J, db_N and db_Hz for energy, force and frequency respectively. The comparison on log scale is quite easier, as 20 db difference is equal to 10 times change. For example, if we want to see the ratio between radius of atom and radius of earth then it is 342 db on log scale.



Annex-3

Unanswered or partially answered problems

[Roadmap for further investigation]

There are many areas in Physics which are not clearly explained.

1. How do we explain the origin of Gravitation?
2. Why Gravitational Force is so weak compared to Electrostatic Force?
3. Where is the Gravitational Potential Energy stored as a result of work done in sending an object in deep space?
4. Why is the force of Gravitation only attractive and not repulsive?
5. How do we explain the origin of magnetism?
6. Why magnetic poles cannot be separated like positive and negative charges (non-existence of monopole)?
7. Why does a moving charge generate a circular magnetic field?
8. What is the link between magnetism, Gravitation and Inertia?
9. Why the precession motion exists in gyroscope?

If we don't believe the theories and explanations given earlier, then it is much more difficult to address the above listed problems. By accepting them, we have answers of many mysteries and further investigation may be easier.

Dream a DC motor in 16th century. Assume that necessary technology is good, all necessary materials, natural earth magnets, alloys are available. The material includes copper, iron, aluminum for housing, graphite for carbon brushes, insulating materials, permanent magnets etc.

Assume that the science of static electricity, batteries, lamps are known but the laws of magnetic force and magnetic induction are unknown.

Visualize how someone can make a DC motor or DC generator. It will look almost impossible to make a motor or generator. Therefore, to make right prototype of Thrust Generator, correct laws or fundamentals are essential!

Annex-4

About Inventor & Author:

Name : Rakesh Goel

Designation : Managing Director & CEO

Qualification :

Bachelor of Engineering in Electronics & Communication [Gold Medalist] from IIT Roorkee, (Formerly known as University of Roorkee), Roorkee, India in 1977.



Experience:

Worked as a Technical Director and Partner in an engineering firm from 1977 to 1992 where he completed various projects and developed many Test Equipments & Control Systems. Acquired experience for about 15 years in electromechanical engineering, DSP and mechanical vibrations. Then established a full fledged R&D organisation S K Dynamics Pvt. Ltd.(SKD), in 1992. Author also worked as the strategic partner of Analog Devices Inc (ADI) since 1994 in the area of motor control and developed motor control solutions for ADI and their customers.

Patents:

Two US Patents in Control System for Permanent Magnet Synchronous Motor (5,635,810) and Improved Gate Driver Circuit and Hysteresis Circuit (5,675,276) Granted, and few other are pending in India.

Papers published:

Papers published on

- (1) Flexible Speech/ Audio Coding published in "Signal Processing..", Jan 1993 IISC, Bangalore, India
- (2) Possible Generation of Gravitational Force (ICGA-5) Oct-2001, Russian Gravitational Society
- (3) Universal Embedded Controller in ISPC conference, March 2003

Core Competence:

Motors and Motor controls, Digital signal processing, Embedded software, Microprocessors & Micro controllers, Power Electronics, Electromechanical Engineering, FPGA, Analog and Digital Electronics, System Engineering/System Integration, Prototype Manufacturing capabilities.

Products & Technologies developed:

More than 50 products and technologies were developed. Some of them are listed here. PMSM, BLDC, SRM Motors and controls for PMSM, BLDC, SRM, ACIM, Stepper etc. Image processing like Ethernet Camera, Tracking Camera, Scanning Camera etc.

32

Class-D Audio Amplifier, Sinewave Inverter., PMSM based Electric Bike & Electronic Submersible Pump, DSP based Vibration Controller (Sine, random, shock). Bofors Gun Control Unit, Electronic Compass etc.

Achievements & Awards:

SKD received many prestigious awards under the leadership of Rakesh Goel including DSIR National Award 2000 for Technology Export of Motor control, EEPC Award 2000 and 2001 for Services Export, ESC Award for project Services in Export in the years 1998, 99 and 2001, NSIC Award for Electric Bicycle Technology, ADI Award for world's first Washing Machine using DSP Control.



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About S K Dynamics Pvt. Ltd.

S K Dynamics Pvt. Ltd. (SKD) was established in 1992 by Rakesh Goel with main purpose of pursuing R&D projects in the area of Electromechanical Engineering, Digital Signal processing, Power Electronics and System engineering. Another prime objective was to complete fundamental and applied research on magnetism, gravitation and thrust generation in space.

Since 1995 SKD is recognized by Department of Scientific and Industrial Research (DSIR), India as in-house R&D unit and now approved as Commercial R&D Company. SKD was Strategic Partner of Analog Devices Inc. USA in the area of Motor Control. Over two Million Household appliances in the USA, Japan, Europe and China were sold, using in house developed Embedded Motor Control Technology.



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Comments on ether and magnetism

Ether was considered in past as a media in which light and heat travels from Sun to Earth. It survived for centuries without much problems but beginning of 20th century was a time for death of ether.

In last 100 years, it was huge problem in physics which effected the developments of space transportation in right direction.

In old Indian science (Hindu Mythology), it was believed that there are five elements named as earth, water, air, fire and sky. However, it was incorrectly interpreted in today's world. The original concept was distorted and incorrectly conceived.

My interpretation about this theory is as follows.

The message was about different form of matter and energy under normal conditions.

- ❖ First form of matter is solid and most suitable example of solid is earth.
- ❖ Second form of matter is liquid and water is most suitable example.
- ❖ Third form of matter is gas and air is most suitable example.
- ❖ The most suitable example of electro-magnetic energy is fire. One can feel radiated heat from fire.
- ❖ The sky is a form of matter (ether), which is the media for EM waves.

It is clear from the above explanation that the whole message was distorted with time. Original concept was lost and only examples remained which were indicating incorrect and incomplete messages.

Therefore, ether was in existence from centuries.

Permanent magnets were available from many centuries, but major progress in magnetism is centered in last two centuries. It has huge applications in today's world. Almost 50% of electricity is consumed in electric motors. Still magnetism is not understood properly and needs further research.

I have given sufficient explanations in this booklet to prove the existence of ether and magnetism as flow of ether. These new concepts are opening new doors for further R&D. Therefore, scientists and engineers should analyze them with fresh mind and should conduct further research in these areas.

- Rakesh Goel

[April 2006]