SPACE DYNAMICS- Volume-I

SPACE MATTER, ENERGY, SPACE PARAMETERS & BEHAVIOUR

PREFACE

However much the modern sciences are developed, it is very unfortunate of a thing that, man of 21st century cannot answer a child for questions of primary level such as;

1. **how Earth is rotating?**
2. **why planets orbit around Sun?**
3. **why not even a single planet moves in the other way round?**
4. **why non rotating planets posses no satellites?**
5. **how gravity does attract things?**
6. **why gravity doesn't attract electron mass, solar wind, light heat etc?**
7. **how weather changes seasonally?.....**

To be frank, there are many things in the world, poorly explained, unexplained or unfound as yet. Otherwise how could such sweet natural things like Wind, Water, Land etc could disguise all at once as disastrous Tornados, Tsunamis and earthquakes to kill thousands of unprepared people. It is therefore, of worth to review what we know and what we don't know.

Field specialization has created too many branches in the tree of Knowledge, and the scholars who climbed up to tip ends of their field branches, are isolated without adequate linkage with other branches and as a result, a wholesome definition or a conclusion upon any matter could not be possible today.

If knowledge is for knowledge's sake, I don't see any need to develop it any further, but it has yet to be improved on behalf of the mankind, to assure protection against overhanging threats, manmade or natural.

Man is far conservative and knowledge is the most dangerous thing in the world, which creates knowledgeables to protect it right or wrong, by shielding it from challenges.

Deduction through observations, is an old art of getting at far distant realities, as used by philosophers, universalists and some of the scientists in the past and it could cut off much laborious and expensive experiments

This is an experimental monograph, born in the desire of explaining the things, so far unexplained or poorly explained. The subject content is compacted in to three volumes and this book, 'Space Dynamics -Volume-1', is to address fundamentals on Space Matter, Energy, Space Parameters and Behavior of Matter.
Sciences are naturally overwhelmed by unnecessary complexity, and 'Uncertainty' is the certain destination in absence of essential linking theories. Everything in this world has a good reason behind to happen.

Cyril H Thalpe Gamage

A science is not improved as far as theories remain unchallenged

SPACE DYNAMICS- Volume-I

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A man went everywhere exploring the world for 'Truth' and ultimately he got it. But no sooner he threw it away because it was not sweater than the 'False' that he got used to. That's how the explorer himself treated his discovery and what could be the attitude in others? Therefore, the most difficult thing in the world is bringing something new, for acceptance.

This is a monograph filled with results of a long term struggle in me with nature observations, practicals, mathematics and deductions. At the first look the facts may seem quite narrative or not interesting and therefore, the reader is kindly requested to have enough patience to keep on reading the first few pages until the facts start drawing your interest gradually.

1.0 THE SPACE MATTER

1.0 DEFINITION

The Space is consisted of masses of three different forms which could be considered as different phases of the unique 'Space Matter', fluctuating in existence, between extreme Contraction and extreme Expansion by exchange of Energy with Time.

1.1 THE THREE PHASES OF SPACE MATTER

1. Space Medium Matter
2. Space Energy Matter
3. Space Atomic matter

1.2 SPACE MEDIUM MATTER

The free space medium is made up of densely packed, soap bubbles like, particles of different scales, which are at relative static stage. It is known to us as vacuum or vacuole which indicates emptiness. But it is not really empty and it possesses a density, pressure and resistance against motion.

Existence of this medium cannot be observed through any scientific apparatus. But we can figure it out through nature observations, deductions and mathematics. It is our experience that space crafts and satellites are decelerated very gradually due to space resistance. Also in case of comets with two tails, one is due to the thrust of solar wind and the other is the resultant of both, solar wind and medium resistance against motion. Therefore so far known scientific data is more than enough to deduce its parameters such as density, pressure etc. through mathematically.

1.3 SPACE ENERGY MATTER

Energy matter is substantial and in existence it appears as projected columns of particles in linear motion or as clouds of particles in rotary motion. Particles are contracted with increased velocity and expanded with decreased velocity. Therefore energy particles such as light, heat & electrons etc. end up as static space medium particles by losing velocity ultimately extending the boundary of the Universe.

Solar wind and lightening strokes are the best examples to exhibit momentum of the Energy Matter. Momentum could not be possible unless there is mass and velocity. Even though it possesses a mass, it doesn't respond to Gravity.

1.4 ATOMIC MATTER

Atomic structure is very well known to the reader and the inner atomic structure with presence of elementary particles such as electrons, protons, neutrons etc. is very well explained by the background science.

But the facts such as; why electrons are rotating around the nucleus, how an atom is polarized, how light& heat particles are absorbed & projected out by atoms, why only the atomic matter responds to gravity, how atomic matter is contracted with increasing velocity? etc. are still remain dark.

2.0 SPACE ENERGY

2.0 ENERGY IN THE SPACE

Energy is defined as the capability of matter of doing work and it along has no existence, away from matter.

Energy is identified generally in four different forms such as;

1. **Kinetic Energy**
2. **Potential Energy**
3. **Volumetric Energy**
4. **Wave Energy.**

2.1 KINETIC ENERGY

Kinetic Energy of any moving mass is as exactly as Sir Issac Newton has defined

$$E_k = \frac{m v^2}{2} \quad \text{.....(1)}$$

where, m- mass of the object and v- velocity of the motion

Energy of rays too, belongs to the category of kinetic energy because a ray is a projection of particles at a frequency in an array along a line as a beam.

2.2 POTENTIAL ENERGY

If any mass is held against the influence of a force, there is a stock of potential energy such as;

$$Ep = mAh \quad \text{.....(2)}$$

where 'h' is the movable distance under the influence of the force and 'A' is the acceleration towards the influence direction of the force if the mass is free to move,

Gravity, Electricity and Magnetism always set Potential Energy in matter within their fields. Chemical energy too could be put in to the same category because fundamentally no chemical reaction takes place without exchange of electric energy in atomic level.

2.3 VOLUMATRIC ENERGY

Volumetric Energy of matter is defined hereby as the work done by the matter in its expansion from the zero volume in to the present volume, against the external pressure..

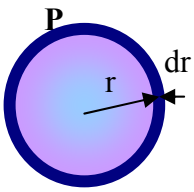

FIGURE-01

$$E_v = \int_0^R P\,4\pi r^2 dr = P\,\frac{4\pi r^3}{3}$$

E_V= PV ……....(3)

Where. P-external pressure & V-volume

Therefore any matter in the space, which holds a volume against the medium pressure, possesses a volumetric energy.

2.4 WAVE ENERGY

Wave energy too is belonged to the category of kinetic energy as a whole, but could not be measured by $\mathbf{mv^2/2}$ because the motion is but a vibration. Nothing of the medium is permanently moved or displaced by the wave if the medium is elastic for wave transmission. But a wave always catches hold of a mass of the medium temporary and moves forward by transferring energy. Therefore if the temporary holding of medium mass 'm_t' is known then energy of the wave can be expressed as a kinetic energy with no difference such as;

$$E_w = \mathbf{m_t v^2/2} \quad \text{……(4)}$$

There are two wave patterns to transmit signals or energy through a medium such as;

1. *Amplitude modulated wave*
2. *Frequency modulated wave*

Difference of a ray and a wave must be clearly identified because medium behavior is different in both cases. A ray is a linier projection of particles through a medium upon a certain frequency. A wave has no mass of it's own but transmits a signal or energy as a whole, through the medium by means of a vibration.

Elasticity of a medium is an essential parameter for transmission of waves or rays and pressure of any medium could be dropped proportionately with the inner commotion due to transmission of waves.

The volumetric work done by the medium against pressure drop, is the energy of the waves.

Ew = (ΔP)V ……(5)

Where, V is the volume of any subjective medium mass and **ΔP is** the drop of internal pressure due to the wave transmission in it**.**

If pressure of any medium is high, velocity of wave transmission too is high.
Examples:-
i. velocity of sound in lower atmospheric layer is higher than that of upper atmospheric layers
ii. velocity of sound in deep water is higher than that of shallow waters.

iii. Tsunami energy wave in the deep sea is much speedily transmitted than that of in shallow costal sea.

3.0 BEHAVIOR OF A MEDIUM

3.1 CRITICAL VELOCITY OF A MEDIUM.

Critical velocity of any fluidic or gassy medium is defined as the maximum velocity that a medium particle can gain through the same medium.

3.11 Velocity of Waves

Maximum wave velocity through a certain medium indicates the critical velocity of the medium but there could be many wave transmissions of which the velocities are lower than the critical velocity of the medium. The critical velocity depends on density, elasticity and pressure of the medium.

Example-1: Velocity of sound is the critical velocity of atmospheric air.
Example-2: Velocity of light is the critical velocity of free space medium.
Example-3: Velocity of heat is lesser than that of light in the space medium.

3.12 Maximum Velocity of Matter?

Could the critical velocity of any medium be the maximum speed that any object may gain through the medium? No. Denser matter gets less medium resistance against motion. (pl refer the equation for space resistance in the 'Space Dynamics Volume-III')

Example-1: Velocity of a jet air craft can be higher than the critical velocity of the atmospheric medium(velocity of sound). Surface material of the air craft must be dense enough or otherwise burning takes place due to friction of the medium.

Example-2: Velocity of neutron mass(moving towards a black hole) can be higher than the critical velocity of the free space medium(velocity of light). Neutron mass is the matter of highest density so far identified by the background sciences. (pl refer the Volume-III for more denser matter in the space with 'Moola Scale Dropping').

3.2 MEDIUM RELATION

A controlled volume V, of space medium of density ρ, develops velocity and drops pressure due to motion from stage (1) to stage (2).as shown in figure-02.

Kinetic energy gain $\Delta E_k = \frac{(\rho V)[v_2^2 - v_1^2]}{2}$

Volumetric energy loss $\Delta E_v = [P_1 - P_2]V$

$\Delta E_v = \Delta E_k$

$[P_1 - P_2]V = \rho V\frac{[v_2^2 - v_1^2]}{2}$

If stage (1) is static ($v_1 \rightarrow 0$, $P_1 = P_0$ the ***pressure of free space medium***) and stage (2) is at the critical velocity ($v_2 \rightarrow c$ the ***velocity of light*** and $P_2 \rightarrow 0$) ie. $\mathbf{P_0 = \frac{\rho c^2}{2}}$ **……..(6)**

Generally, when any fluidic medium is in motion, pressure is given by the medium relation;

$$\mathbf{p = P_0 - \rho v^2/2 \ldots\ldots\ldots\ldots\ldots\ldots(7)}$$

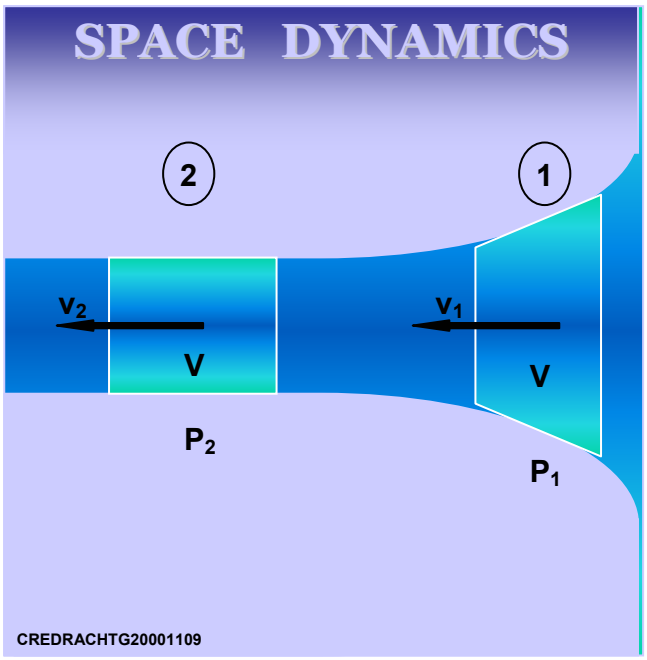

FIGURE-02

3.3 CASE STUDIES

3.31 Velocity of Sound in Atmospheric Medium

Let us deduce the velocity of sound in the bottom layer of the atmosphere by using the equation-6,

Known data: atmospheric pressure $p \approx 1.0 \times 10^6$ dyne/cm^2

atmospheric density $\rho \approx 1.29 \times 10^{-3}$ g/cm^3

by equation-6; $\mathbf{p = \rho v^2/2}$

$v^2 = 2P/\rho$

$= 2(1.0 \times 10^6) / 1.29 \times 10^{-3}$

$v = 39{,}374.96$ cm/s

$= \underline{1312}$ ft/s

This result is close to the measured velocity of sound in air(1087 ft/s at 0^oC and which could be a bit higher at room temperature)

The equation-6 also shows how critical velocity of a medium is increased when density of the medium is low and how it is increased with increased pressure of the medium.

7

3.32. Velocity of a Tsunami Energy Wave

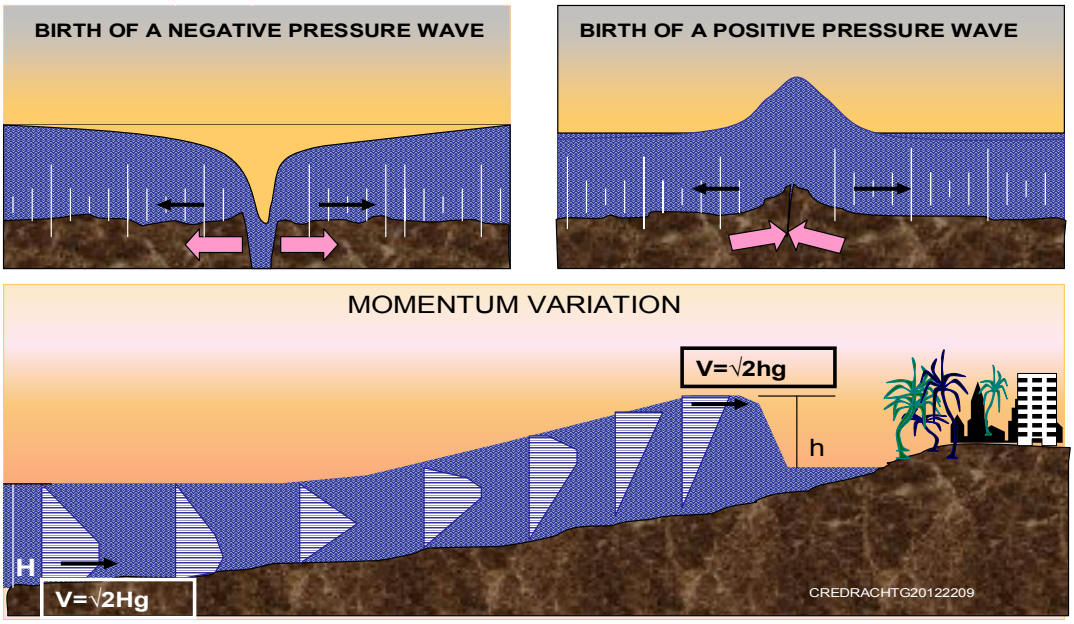

FIGURE-03

When earthquakes take place in oceans a great stock of energy is released to create pressure waves which transmit energy underwater to result a tidal wave ultimately at shallow regions.

A pressure wave could not be observed in deep sea because it is just a frequency modulated vibratory wave through the medium and when it reaches shallow depths only the great stock of energy is transferred gradually in to a tidal wave which is quite visible.
There are two types of underwater pressure waves possibly to crop up such as 'Negative pressure wave' and 'Positive pressure wave'. A wave is negatively originated when the seafloor is expanded by a rift due to an earthquake. Contrarily a positive pressure wave is created when the seafloor is contracted at trenches between two tectonic plates as shown in the figure-03.

However a great stock of energy is transmitted through a frequency modulated pressure wave which creates a tidal wave ultimately at shallow regions of the sea.

Let us calculate wave velocity at deep sea at depth 'H' by using the equation-6;

$$\mathbf{P = \rho\, v^2/2}$$

8

Pressure at a depth 'H'in water $=H\rho g = \rho\, v^2/2$ where g is acceleration of gravity.

i.e. $\underline{\mathbf{v = \sqrt{2gH}}}$

But velocity of the tidal wave at shallow sea is much lesser than that such as;

$\underline{\mathbf{v= \sqrt{2gh}}}$ where 'h' is the height of the tide.

Theoretically a Tsunami wave is an underwater pressure wave at the origin and it becomes a simple mass motion of the medium ultimately. Therefore the final form of a Tsunami cannot be considered as a wave of amplitude or frequency modulation but a mass motion with a tidal rise.

If any medium is elastic for wave transmission even a single particle of the medium is not displaced by a wave but only vibrated (mud, for instant, is not a good medium for wave transmission because wave energy is immediately lost due to plastic deformation of the medium).

Deep regions of ocean is elastic enough for wave transmission because of high pressure at depths. Density of water 'ρ' in the equation-6 remains unchanged but due to low pressure at coastal sea, the wave becomes gradually in to a simple mass motion by loosing velocity.

Momentum 'mv' (mass x velocity) is the best indicator of analyzing a Tsunami wave and momentum of a wave could not be lost during transmission if the medium is elastic enough. (for example the free space medium is highly elastic for wave transmission and waves through it gets maximum velocity, near to the critical velocity of the medium.)

Momentum of a vibratory energy wave = (temporary mass) x (velocity)

$$\mathbf{M = m_t\, v}$$

Energy of the wave $\mathbf{E = m_t\, v^2/2}$

Temporary mass means that a wave holds a certain stock of medium mass at every moment to transfer energy but not permanently because at the next moment it is moving forward with another stock of medium mass. But as a whole, at every instant the wave is moving with a stock of medium mass. If the medium is uniform and of high elasticity, then the wave transmission is not disturbed at all and also medium particles are not displaced.

But in case of, the medium elasticity is not adequate, the medium particles are also moved with the wave. That is what exactly happened to Tsunami energy wave at shallow coastal belts and it creates a complete mass motion ultimately to be a

disastrous tidal wave. Momentum of a vibration is finally converted in to a momentum of linear motion.

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The above example of underwater pressure waves explains how a medium behaves with respect of wave transmission in it. It is very important to compare things always with known events and phenomena, because the free space medium, the new study field under 'Space Dynamics' too could not be different from any other known fluidic medium in the nature. (pl ref. chapter-6 for the medium parameters such as pressure, density etc of the free space medium).

4.0 ULTIMATE ENERGY STOCK IN MATTER

According to the **Albert Einstine's Conservation of Energy, $E=mc^2$**,the ultimate energy stock in matter is explained.

But the relation is true only for **atomic matter** and there are two other different sort of matters such as **energy matter** and **space medium matter.**

4.1 ENERGY OF SPACE MEDIUM MATTER

Space medium possesses no kinetic energy because it is static. But the ultimate energy content in the entire space medium is so big that it could not be expressed in any known units of measuring energy.

As explained in paragraph 2.3, energy of space medium is entirely because of it's volume against pressure of the space.

If 'P_0' is the pressure in our space the energy stock of any volume 'V' of the space medium is given by the equation; $\mathbf{E_s = P_0 V}$ **……..(8)**

P_0 is given by the equation (6), $P_0 = \rho c^2/2$ where 'c' is velocity of light

i.e. $E_s = (\rho/V)\, c^2/2$

$\underline{\mathbf{E_s = m c^2/2}}$

It indicates that ultimate energy stock of a mass 'm' of Space Medium is **$mc^2/2$**

4.2 ENERGY OF ENERGY MATTER

The structure of the Space Medium Particle' and that of the 'Energy Particle' are same with no difference but velocity is the identical factor which differs one from the other. An energy particle has a big velocity and therefore it possesses a stock of kinetic energy. Even though the volume of a particle is infinitesimal, it possesses a volumetric energy too.

i.e. $$Ee = pV + m v^2/2 \quad \text{.....(9)}$$

When velocity is increased the external pressure is dropped naturally due to surface friction and the particle is then contracted. But how could size of an energy particle is decreased when external pressure is dropped? Isn't that contradictory with the case of a balloon which is furthermore expanded when external pressure is dropped?

That is the secret and the most important linking theory 'Skin Boundary of Matter' which had been overlooked by the so far developed science. (pl refer the chapter 7 for the new theory).

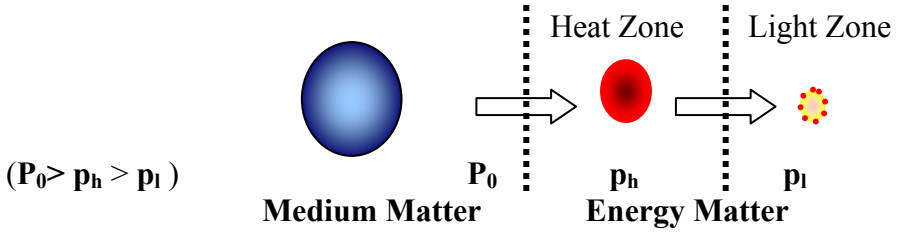


FIGURE-04

As shown in figure-04, a static medium particle can be converted in to an energy particle with increased velocity. By then the volume becomes almost zero and energy is no more due to volume but due to mass and velocity only.

By equation-9, $$Ee = pV + m v^2/2$$

$V \approx 0$ and $v \approx c$ ie. $$\underline{E_e = mc^2/2}$$

Therefore ultimate energy stock of 'Energy Matter' is entirely of kinetic energy due to motion .In contrary energy particles are decelerated due to space resistance and ultimately become static medium particles.

4.3 ENERGY OF ATOMIC MATTER

Energy of an static atom is due to its volume and mass only. Volumetric energy due to its volume has been derived as P_0V, where P_0 is medium pressure and V is the atomic volume. Besides that there is a rotary system of charged particles in an atom. A rotary system means motion and therefore ultimate energy of the mass is kinetic energy, $mc^2/2$.

therefore ultimate energy of an atom; $$E_a = mc^2/2 + P_0V \text{.....(10)}$$

By equation (6), $P_0 = \rho c^2/2$ where ρ is the density of space medium

ie. $$E_a = mc^2/2 + \rho V c^2/2$$
$$= mc^2/2 + mc^2/2$$

$$\underline{E_a = mc^2}$$

It is another proof for Albert Einstine's equation of Energy Conservation.

11

In accordance with above analysis it can be summarized in to;

i. Ultimate energy stock in space medium matter $E_s = mc^2/2$
ii. Ultimate energy stock in space energy matter $E_e = mc^2/2$
iii. Ultimate energy stock in space atomic matter $E_a = mc^2$

5.0 SPACE STRUCTURES

Technologies are not improved enough as yet to observe the 'Space Structures' but the existence of them, could be comprehend through nature observations, mathematics and Scientific Deduction.

5.1 STRUCTURE OF SPACE MEDIUM MATTER

Space medium is consisted of tightly packed medium particles of different scales. It is so widely spread everywhere that, it is existing even in our body though we don't feel. It's density is lower than any known lightest gassy medium but pressure is so high that it is 10^{11} times that of the atmosphere.

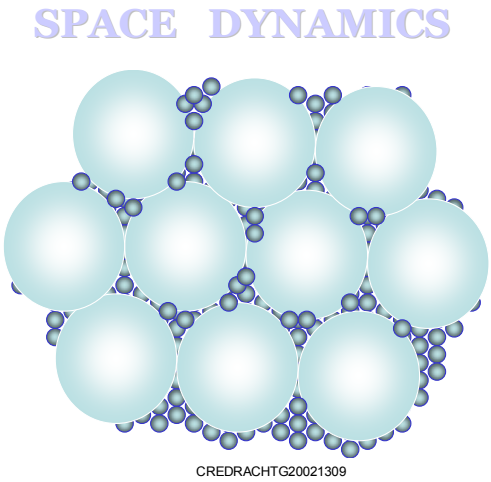


FIGURE-05
Balloon like particles posses infinitesimal mass but no kinetic energy

Medium structure is made up of a combination of medium particles of different scales and only the finer particles represent the small room in an atom.

More fine particles are to represent the rooms in energy particles and likewise everywhere in the space is occupied by medium particles of different scales. *(pl refer 'Space Dynamics-Volume-III' for scale drops along the 'w-axis' of 4th dimension)*

5.2 STRUCTURE OF SPACE ENERGY MATTER

Energy particle is as same as the medium particle in the structure but holds a big stock of kinetic energy due to its high velocity in linear or rotary motion.

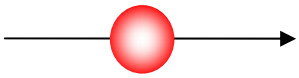


FIGURE-06

In atomic matter energy particles (electrons) keep a revolutionary motion and in outside space, they keep nearly a linear motion being projected out. Other smaller energy particles such as light and heat keep a linear motion being projected out from electrons and atomic mass as well under different conditions. (pl refer chapter 7 and 8 for 'Skin Boundary of Matter and Energy Projection')

The most important thing is that, energy particles also become space medium particles ultimately, being expanded when they reduce velocity due to space resistance.

5.21 Case Study of Solar Wind

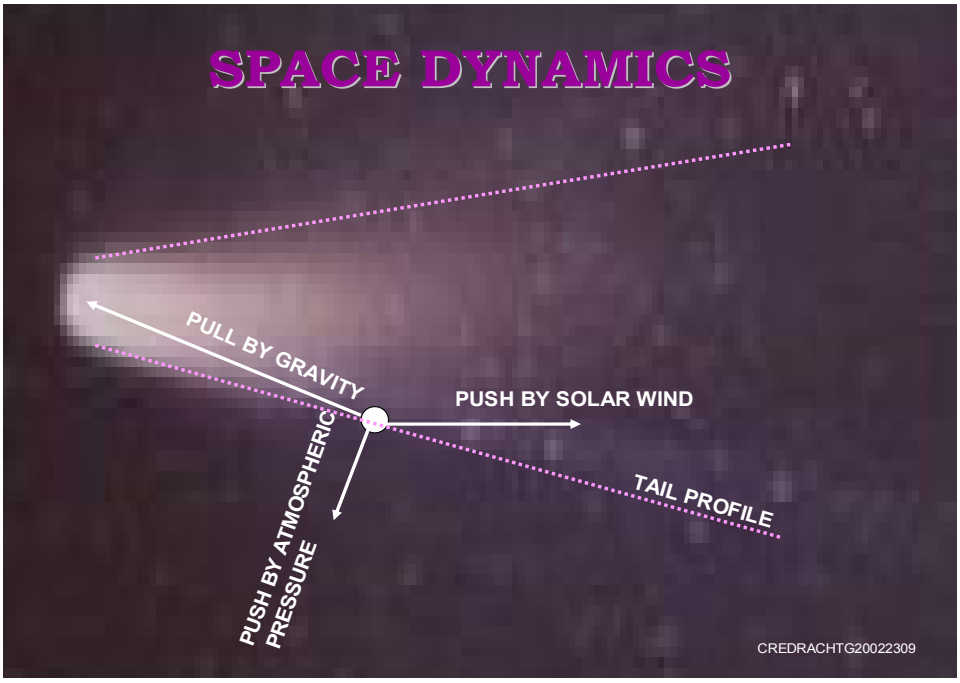


FIGURE-07

Tail of a comet is known to be formed due to the push by the solar wind. But what is solar wind? a gas? a wave?
No, that is nothing else but energy rays projected out from the radiating layer of Sun such as light, heat and electrons.
Energy Matter has a momentum because of its mass and high velocity. When it hits upon a lightly pending atmosphere of an asteroid, an impulsive force is induced to push the lighter particles off creating a beautiful tail.

As shown in figure-07, a dust particle of the tail is posited at right where the three forces are balanced. Some comets exhibits two tails and then the case could not be explained by solar wind only because the two tails are formed by the influence of two different phenomena such as 'Solar Wind' and 'Space Resistance'. (pl refer 'Space Dynamics-Volume-III' for space resistance) In that case the material content in two tails must be different because solar wind can push more lighter material and the space medium resistance pushes even heavy particles. Therefore direction of Sun as well as the direction of motion of the comet, decide the resultant directions of the two tail profiles.

5.3 STRUCTURE OF ATOMIC MATTER

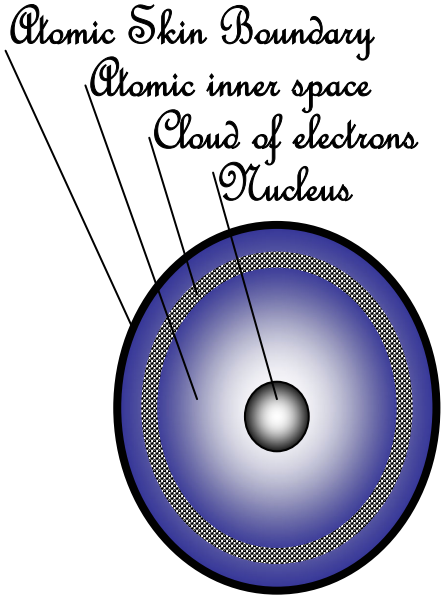


FIGURE-08

Atomic structure is very well known since several centuries and inner atomic particles such as, neutrons, protons and electrons mainly have also been identified. But it is wonderful how so far developed sciences could overlook the most important feature of an atom, the 'Skin Boundary'.

Without accepting the existence of '**Skin Boundary of Matter**' nothing in the world can be explained with a certainty. Even **Gravity** could not be explained well without accepting existence of the skin boundary of atomic matter and the '**Mechanism of Gravity**' remained unexplained so far. The '**Mechanism of Gravity**' only can explain how atomic mass is attracted towards the 'Gravity Source' by means of a frequency modulated wave called '**Gravitational Wave**'. (pl refer 'Space Dynamics Volume-II' which is entirely allocated for Gravity, Mechanism of Gravity, Gravity Deviation and Gravity based Motion in the Space) Not only **Atomic** particles but **Energy** and **Medium** particles too possess skin boundaries. The structure and specific role of the **Skin Boundary** are explained in chapters-7& 8, under '**Skin Boundary of Matter'** and '**Energy Projection**'.

6.0 SPACE PARAMETERS

The '**Dynamics in the Space'** cannot be explained, until '**Space Medium Parameters**' are well defined.

Working on hypothesis for a start, perhaps brings light upon things in the darkness and also, it is an essential feature in the art of 'Scientific Deduction'.

6.1 THE DARING HYPOTHESIS

Being exposed to the high Pressure of the Space Medium, a Neutron is exploded in to a Hydrogen atom, originating the Universe.

6.2 THE ELEMENTARY BIG BANG

The elementary big bang is not so small but an explosion of the biggest scale because it expands the volume of a Neutron $\{^4/_3\ \pi(10^{-13})^3\ cm^3\}$by 10^{15} times to be a Hydrogen atom $\{^4/_3\ \pi(10^{-8})^3\ cm^3\ \}$.

The neutron mass is stable as far as it keeps motion(linear or rotary) at a great velocity because pressure drops in motion due to surface friction. In atomic space, a neutron is not exposed to high pressure zone because of the inner atomic **electromagnetic spherical vortex of the charged particles**(pl ref Space Dynamics Volume-III for inner atomic rotary system).
Also the neutron mass in the free space, moving towards a Black Hole of a **space medium vortex**, doesn't expose for high pressure because of it's great speed. But at the other end of the vortex there must be a 'Big Bang' by expansion of the neutron mass in to Hydrogen mass due to deceleration of speed. That is exactly where another galaxy is being born (pl refer 'Space Dynamics Volume-III' for the macroscopic behavior of space matter)

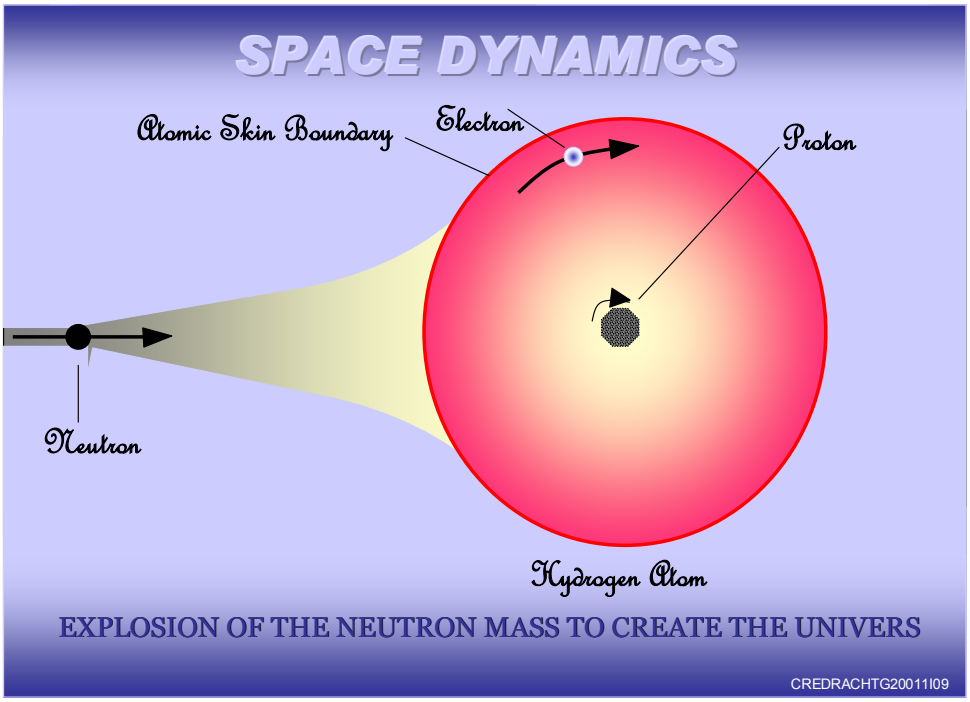


FIGURE-09

6.3 DEDUCTION OF SPACE PARAMETERS

Known data:- mass of a Neutron = 1.675×10^{-24} g
mass of a Hydrogen atom = 1.673×10^{-24} g
atomic radius $\approx$ 1×10^{-8} cm
velocity of light (critical velocity of medium) = 2.998×10^{10} cm/s

The phase transformation:- **Neutron** $\longrightarrow$ **Hydrogen atom**

Energy Conservation, $E_n = E_h$

Volume of a neutron is so infinitesimally small that its ultimate energy stock is due to its mass only. But Hydrogen atom has a big volume and its energy is not entirely because of it's mass but also the volume.

Let us consider energy of both sides of above phase transformation (pl ref equation-10) where P_0 is the space pressure and V is the volume of the atom.

$$\frac{m_n c^2}{2} + 0 = \frac{m_h c^2}{2} + P_0 V$$

i.e

$$P_0 = \frac{(m_n - m_h)c^2}{2V}.$$

by substituting the known values;

$$= \frac{(0.002 \times 10^{-24})(2.998 \times 10^{10})^2}{2[4/3\ \pi(1 \times 10^{-8})^3]}$$

$$P_0 = 2.145 \times 10^{17}\ \text{dynes/cm}^2$$

That is the size of pressure in the space around us but luckily we don't feel it because it exists inside of our bodies and out side as well. It is nearly $2x10^{11}$ times higher than the atmospheric pressure(1.01×10^{6} dynes/cm2).

Let us calculate the density of the Space Medium by the equation -4,

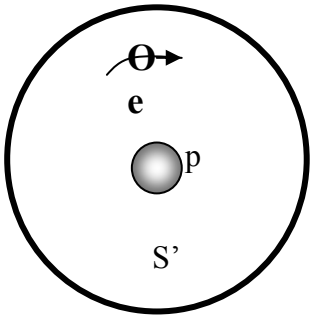
$$P_0 = \frac{\rho c^2}{2}$$

$$\rho = \frac{2\,[2.145 \times 10^{17}]}{(2.998 \times 10^{10})^2}$$

$$\rho = 4.773 \times 10^{-4}\ g/cm^3$$

It is lower than any known fluidic or gassy medium and it is even lower than the atmospheric air density($1.293\ x10^{-3}\ g/cm^3$).

6.31 Mass of the 'Skin Boundary' of a Hydrogen atom



P_0

FIGURE-10

The room in a Hydrogen atom is just like an another space of dropped scale (S'-named as Moola 1st Space) and it posses a mass 'm_s,' and a volume 'V'.
Volumetric Energy of that space is given by eqn.-8

$$E_s, = P_0 V$$

$$= m_s, c^2/2$$

$$\therefore m_s, /_2(2.998 \times 10^{10})^2 = (2.145 \times 10^{17}) \times \{^4/_3\, \pi (1 \times 10^{-8})^3\}$$

i.e. $$\underline{m_s, = 1.999 \times 10^{-27}\ g}$$

that is the mass of space medium entrapped in the atom.
Then mass of the atomic skin boundary 'm_b' also can be deduced by consideration of mass in both sides of the elementary big bang because mass could not be destroyed;

$$m_n = m_p + m_e + m_s, + m_b$$

$$1.675 \times 10^{-24} = 1.672 \times 10^{-24} + 9.108 \times 10^{-28} + 1.999 \times 10^{-27} + m_b$$

i.e. $$\underline{m_b = 9.1 \times 10^{-29}\ g}$$

That is the mass of the skin boundary, hidden so far.

7.0 SKIN BOUNDARY OF MATTER

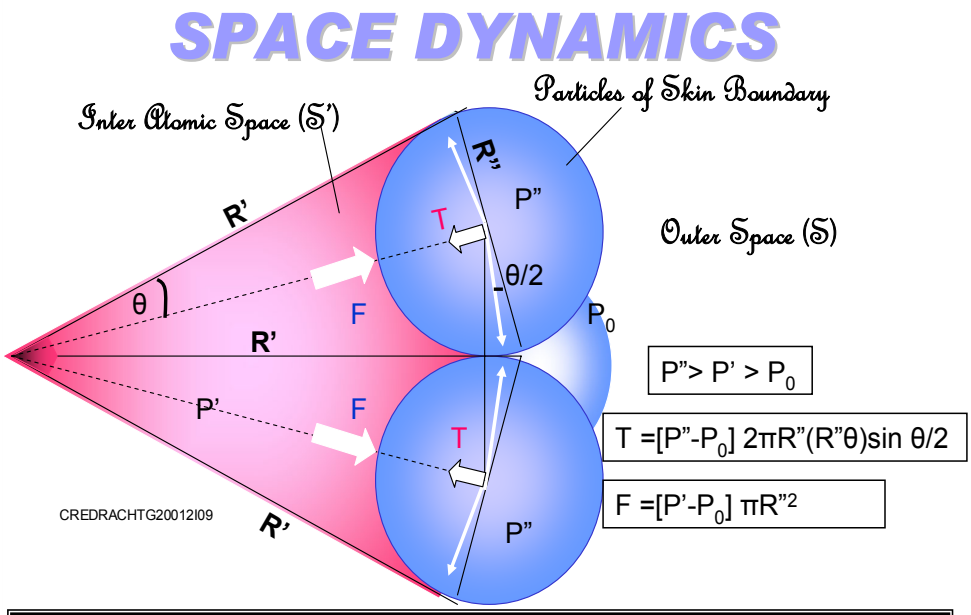
7.1 DEFINITION

Skin boundary of matter is a membrane, which is made up of static particles of dropped scales (Moola 1st, Moola 2nd etc.- pl ref .Volume-III) and they are tensioned automatically by the pressure difference between inside and outside of the skin.

Skin boundary of matter is the most significant outcome from all above deductions, because it clear opens a path in Physical Science to jump forward. Without accepting the existence of 'Skin Boundary of Matter' a lot of secret phenomena in the nature such as: Inner atomic behavior, Projection of energy particles, Gravitational wave, Moola scale drops, the 4th Dimension etc. would certainly remain unexplained for ever.

7.2 THE THEORY OF SKIN BOUNDARY OF MATER

Matter in the space is elementarily made up of particles and they possess boundary skins which are also made up of infinitesimal particles. The boundary skin is tightly tensioned due to the pressure difference between inside and outside. Size of a particle is inversely proportionate to the internal pressure such that; $P_i \propto 1/R^2$.



For stability of a skin particle, F=T, i,e, $[P'-P0]\ \pi R''^2 = [P''-P0]\ 2\pi R''(R''\theta)\sin\theta/2$

Suppose, $P_0 \approx 0$ for simplicity, $\sin\theta/2 \approx \theta/2$ for $\theta << $ and $\theta \approx R''/R'$

i.e. $P1=P2\ \theta2$ and $P_1/P_2 = R''^2/R'^2$ or generally $P \propto 1/R^2$

FIGURE-11

As shown in the figure-11, the tension of the boundary skin of an atom is increased and then the atom is contracted when external pressure drops. But external pressure, the pressure of our free space ($\mathbf{P_0 = 2.145 \times 10^{17}}$ **dynes/cm^2**) is not dropped as far as the particle is static. If the particle is moving in the medium

only the pressure could be dropped due to surface friction such as given in the equation –(7);
$p = P_0 - \rho v^2/2$ where, '**v**' is the velocity and '**ρ**' is the density of the medium.

7.21 Space Resistance and due Effects

Space medium is resistive for motion and when any object is moving speedily, surface is sheared due to surface friction and then external pressure is heavily dropped. That can happen in both cases either object is moving with respect to the medium or medium is moving with respect to the object.
According to the theory of 'Skin Boundary of Matter' the tension of the boundary skin is increased when external pressure is dropped. But at the same time internal pressure increased and at the critical stage of this, particles of the boundary skin are shot out just like bullets from a gun.

That is how 'Energy Matter' is born to lighten the Universe. They don't belong to the category of waves but behave as rays or columns of particles moving at great speeds. Light and heat particles are shot out by electrons moving at shearing velocity in any resistive medium. Electrons don't shear through the free space medium because of low speed but sheared in any gassy mediums of high resistance.

Atomic matter that moves in atmosphere is sheared due to high resistance and observed as burning asteroids. Similarly atomic matter shears through space medium and projects energy rays such as light &heat at the critical velocity of the medium. Then the matter is highly contracted in to neutron mass and that phase transformation normally takes place when matter is drawn towards a Black Hole or a Space Medium Vortex.

8.0 PROJECTION OF ENERGY PARTICLES

Space matter, at elementary particles level, comprises a skin boundary which is also made up of particles of the dropped scales. Under special conditions, the particles of skin boundary are projected out at great speeds. They are identified as **Energy Matter** such as; electron, light and heat. Light particles are shot by electrons moving at shearing velocity through any resistive media. Therefore, there could be electrons of different weights in existence, in accordance with their different stages of wearing.

There are differences in light particles to be observed in the nature and can be categorized such as;
1. Direct Sunlight, Arc welding, Lightning, light of electric bulb
2. Light from White Dwarfs in the space, light of florescent bulb

3. Reflected light from non-mirror surfaces, Moon light etc

Light particles in the first group are shot out from **shearing electrons**. Strength of them could be varied in accordance with the distance from the source and velocity at projection. Light is naturally weakened when travelled long distances due to deceleration of motion against space resistance. When velocity is decreased, light particles become heat and finally expanded to be static medium particles.

The light belongs to the second group is shot out from **shearing atomic matter** and also it belongs to a different dropped scale. Atomic matter is shearing when it is moving at great speeds with respect to the medium. But in case of a white dwarf the atomic mass is not moving and how could it is sheared to project light particles? That is because the space medium matter is absorbed towards the centre of the white dwarf for the **fundamental phase transformation** of matter.(pl refer 'Space Dynamics Volume-III' for the **4th dimension** which only could explain where the matter is gone therein.)

The third group is different because light is not originated there at the surface of matter but reflected and scattered everywhere due to surface unevenness. However it could not be the nucleus of an atom which reflect all the light particles back and the phenomenon of '**skin boundary of matter'** has to be accepted.

As shown in figure-12, a skin particle is shot away with a great velocity by an electron which is moving at its shearing velocity in any resistive medium. Not only electrons but even atomic matter projects energy particles out under similar conditions.

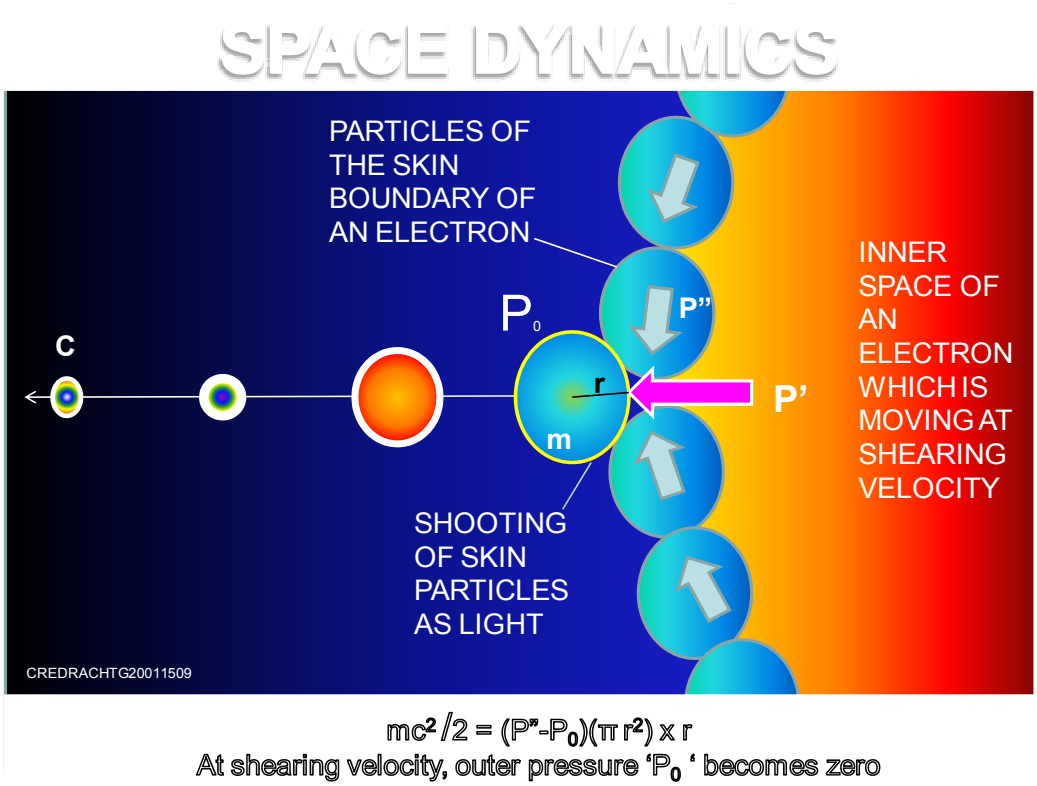


FIGURE-12

8.1 SHEARING VELOCITY OF MOTION

Shearing velocity is defined as the ultimate velocity of a particle (or object) at which Energy projection takes place due to pressure drop by frictional shearing of the skin.

Ex-1. When a flow of electron is moving in a gassy medium it shoots light and heat particles out. In arc welding that can be simply observed.

Lightning branches of a thunder stroke as shown in the figure-13, also exhibit that potential difference and resistance of the medium only decide the path but Gravity has no role there to play with the electron mass.

FIGURE-13

Ex-2. When an asteroid moves shearing through the atmosphere it shoots light and heat due to frictional burning.

Ex-3 When atomic matter is moving at the critical velocity of the space medium (velocity of light), it projects light and heat particles out.

That phenomenon could be observed in stars being drawn to a black hole or being contracted in to a black hole (figure-14- a white dwarf being contracted).

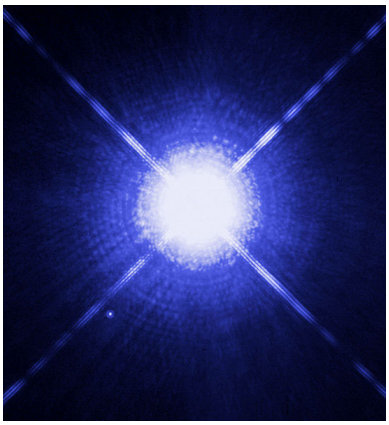


FIGURE-14

8.2 THE DIFFERENCE OF CRITICAL VELOCITY & SHEARING VELOCITY

8.21 Critical Velocity

There is a big difference between the two above mentioned velocities. The Critical Velocity as defined in 3.1, is related to the medium only because it is the ultimate velocity that, a medium particle can move through the same medium.
That also represents the maximum wave velocity through the medium because a wave too is moving always by holding a medium mass temporary.

8.21 Shearing Velocity

Shearing Velocity is more related to the moving object (or matter) because it differs from object to object. Not only the substance but the facts such as; surface roughness, density of the surface material(skin) and shape(aerodynamics) of the object etc decide the shearing velocity of any moving object. Perhaps the Shearing Velocity of any matter could be higher than the Critical Velocity of a medium.

Example-1: an asteroid could be burnout at a certain speed in the atmosphere but a space craft can pass perhaps at a higher speed without burning its surface. Therefore the **shearing velocity** of the space craft is higher than that of the asteroid. **Critical velocity** of the atmospheric air is the velocity of sound and it is very low..

Example-2: in case of lightning, we see it at first and hear it late. Light particles are so finer in size and so denser that, they are not sheared due to atmospheric air resistance. So it travels at its critical speed(velocity of light) with respect to the space medium. Velocity of sound is the critical velocity of atmospheric medium and it is very low.

Similarly there must be velocities in the space, which are greater than the velocity of light. Particles of more denser materials such as neutron mass must be able to move at higher velocities without being sheared by the medium resistance. (pl refer 'Space Dynamics Volume –III for more contracted denser matter than neutron mass.)

However, motion in the space is resistive and therefore energy consumptive.

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9.0 SCATTERING AND GATHERING OF SPACE MATTER

Space matter is scattered, expanding the universe, by improved 'Linear Motion' of matter and the universe is contracted and gathered back again by improved 'Rotary Motion' of matter.

9.1 SCATTERING OF MATTER

The space matter is scattered by influence of two different phenomena and the system boundary of the universe or subsystems are extended.

9.11 Explosion and Scattering of Matter

Atomic Matter is explored and scattered releasing energy, being subjected to high pressure.
This is known as the **nuclear fusion** and the kinetic energy stored in the inter atomic rotary system is released out when boundary skin of an atom is failed.

In nuclear reaction also, the skin boundary is damaged by projection of energy rays by means of radioactive substances and the energy of inner atomic rotary systems is released.

9.12 Projection and Scattering of Matter

Energy matter is projected out whenever matter exceeds 'Shearing Velocity' in a resistive medium and ultimately matter is scattered as a whole, to expand the universe.
Energy matter comes to a stop reducing velocity ultimately to become static space particles and that is how the space is expanded.

9.2 GATHERING OF MATTER

The space matter is gathered by influence of three phenomena and the subsystems and the universe, as a whole, is contracted then.

9.21 Gravity and Gathering of Matter

Gravity is one of the most influential phenomena of gathering of atomic matter. The attraction is due to a frequency modulated wave through the space medium and gravity cannot influence upon the 'Energy Matter' such as electrons, light, heat or upon the 'Space Medium Matter'.

(Please refer 'Space Dynamics-Volume-II' which is filled with Gravity, Gravitational Wave, Gravity Deviation and Gravity Based Motion in the space.)

9.22 Magnetism and Gathering of Matter

Magnetism is the phenomenon which exhibits how matter responds to motion of space medium.

A magnet is an array of steel atoms which can move the space medium in a vortex. Atoms of any substances are polarized but only the steel atoms can rearrange its structure by turning and therefore succumbed to the influence of medium vortex and moved in the direction of medium pressure difference. (pl refer the 'Space Dynamics-Volume-III' for Magnetism, Electromagnetism and the Mechanism behind the Fleming's hand rules.)

However magnetism is not so clumsy of a phenomenon as it appears to be in the school laboratory, but it is the mechanism which gathers space matter and swallows even galaxies and a White Dwarf is a good example to exhibit how magnetism of supreme magnitude swallows a sun.

9.23 Medium Vibration and Gathering of Matter

The space medium is highly vibrated due to the inner commotion of the atomic matter and as a result, the medium pressure is dropped. Where there atomic mass is centralized, pressure too is dropped towards the centre due to high concentration of gravitational waves.

Therefore the medium particles are packed and compacted towards the centre at where pressure is dropped and ***that is how the universe is formed without a skin boundary around.***

Example: For a simple demonstration of the phenomenon, put some ping-pong balls in to a water basin and observe.

Waves are generated due to even slightest movement of the balls and wave concentration seems thicker in the space between balls. Where wave concentration is high pressure is dropped there. Therefore you may observe after some time, the balls are pushed together as shown in the figure-15.

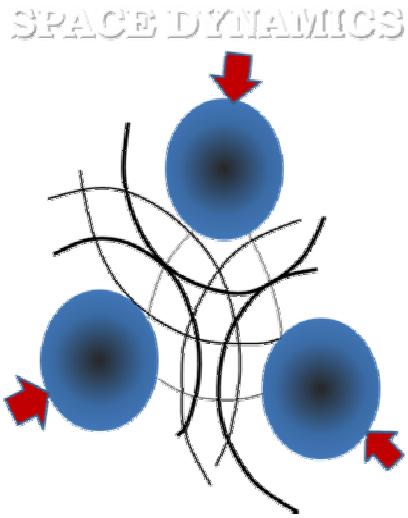

FIGURE-15

But gathering is done somewhere at a corner of the basin because basin wall too generates waves by reflecting them back. That is similar to the case of ocean, where any floating object is pushed upon the beach because of high wave concentration and due pressure drop at the beach.

- ***Multi Universe*?**

But in consideration of the Universe, there are no boundary walls or beaches and therefore the wave concentration must be higher at the central region where atomic mass is densely gathered. In other words, the center of the Universe must be there, where space mass is densely packed. But in accordance with modern astronomical findings the space mass seems to be centralized at distant pockets. Therefore space mass is not uni-centric and the existence of 'Multi Universe'(multiverse) has to be accepted. Also there could be no any active forces to push or pull between such pocket Universes because there exist no medium in between them, other than the Absolute Vacuum. Gravity, Electricity or Magnetism are inactive there in Absolute Vacuum to pull or push the pockets. But communication in between the pocket universes(Galaxies) by means of light, is possible because energy rays can travel there without any medium resistance.

- ***Is Light Bend?***

Yes light rays bend when they travel close by a Sun or a planet of high gravity but not because of Gravity. Energy particles such as light, heat or electrons don't respond to gravity. But they are pushed a little bit towards the gravity sources due to the medium pressure drop created by the high commotion of gravitational waves at the sources, just like how ping-pong balls pushed.

10 DISCUSSION

Theories in any subject field are so interlinked with one another that, things become much complicated and followers are bewildered when essential linking theories are missing. Therefore it is of worth if scientists review the so far development of their subject fields, in order to identify voids and gaps to fill.

Nothing is permanent in this world and Newton's Gravity could hold its championship for centuries till it failed ultimately to explain the dynamics in the inner atomic world or macroscopic world. For an instant, 'Applied Dynamics' could not explain how planets revolve round the Sun and why not even a single planet revolves the other way round. Besides that Physics failed to explain the behavior of matter in worlds of extreme scales, in a certainty.

But that is exactly due to absence of essential linking theories or otherwise there could be no difference in phenomena either for microscopic or macroscopic level of worlds and fundamental realities must be universal and eternal.

Therefore Newton's Gravity could have been enough to explain dynamics in all the worlds if only he could strike on the most important linkage theory of 'Gravity Deviation'. Similarly the elementary behavior of matter could not remain in UNCERTAINTY, if the linking theories such as 'Skin Boundary of Matter' and 'Elementary Big Bang' had been known.

The next monograph, 'Space Dynamics Volume-II', is entirely filled with so far unexplained in the world of Gravity, under the headings, 'Mechanism of Gravity', 'Theory of Gravity Deviation', 'Gravity Based Motion in the Space' and 'Future of Winning Gravity'.

However to sum up, no man can create theories unless they really exist in the NATURE. Also, a scientist cannot find anything without help of the stock of existing knowledge, ever accumulated in the global human civilization through eras. Therefore the MIRACLE is not the exploration, but the WORLD which could never be finished EXPLORING.

END

The subject is extended to volumes (II) and (III)