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Accurate Age of the Earth Calculation by a New Fundamental Parameter

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Abstract

The most typical old question that scientist struggle with is the exact age of the earth. Accepted earth's age is about 4.54 billion years (plus or minus about 1%) which derives from several lines of evidence with many involved assumptions. Furthermore this age could not be computed directly and solely from the earth and its determinant properties without contemplate suppositions. Also no scientific method can prove earth's actual age and the exact accretion time of earth as yet. In this paper exact age and accretion time of the earth are determined by a new basis parameter in universe that's called strength limit number of earth and by other substantial factors. Results represented that present exact overall age of the earth is 4.7303652362904 billion years and age of the earth since earth's initial complete formation (old age of the earth) is 4.55017504989450 17745329167415032 billion years. Therewith the exact accretion time of earth is 180.1901863 958982254670832584968 million years. Also complete formation and accretion time of the oldest known solid constituents in meteorites according to present exact age of the earth is 163.365236 2904 million years. Finally, strength limit factor of earth and distance that light travel in one year prove that the earth is created in 6 cycles. The exact age of the earth performs main fundamental impressment role in new scientific discoveries (such as biological and particles discoveries).

Keywords

Strength Limit of Earth, Exact Age of the Earth, Present Standard Gravity, Gravitation's Exponential Impact Coefficient, Gravitation's Equivalency Density, Strength Variations Coefficient, Universe Gravitational Field, Gravitational Particles, Neutron's Exact Main Internal Recycling Time

Subject Areas: **Geology, Geophysics**

1. Introduction

The Earth is a constantly changing planet. Its crust is continually being created, modified, and destroyed. As a result, rocks that record its earliest history have not been found and probably no longer exist. Nevertheless, there

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is substantial evidence that the Earth and the other bodies of the Solar System are 4.5 - 4.6 billion years old (about 4.55 billion years old), and that the Milky Way Galaxy and the Universe are older still. The principal evidence for the antiquity of Earth and its cosmic surroundings is [1] [2]:

1) Age of the Earth from seasonal rings and layers

If you've ever seen a horizontal slice of a tree trunk, you've seen how a tree forms a new growth ring each year. In years of drought, the tree grows less quickly so the ring is narrower; in good growing seasons the ring is thicker. A tree's age can be found by simply counting its rings. By comparing the pattern of thick and thin rings to weather records, scientists can verify that the method is accurate. This method can even be used on dead trees that fell in a forest long ago. For example, the last 200 rings in the dead tree might match up with 200 rings early in the life of the living tree, so the two trees together can count back many years. In this way, multiple trees can be used to build a master chronology for a forested region. European oak trees have been used to build a 12,000-year chronology [3]. The annual ice layers in glaciers provide a similar method that goes back much further in history. Each year, snowfall varies throughout the seasons and an annual layer is formed. Like the tree rings, this method can be verified by comparison to historical records for weather, as well as to records of volcanic eruptions around the globe that left thin dust layers on the glaciers. Scientists have drilled ice cores deep into glaciers and found ice that is 123,000 years old in Greenland [4] and 740,000 years old in Antarctica [5]. These annual layers go back much farther than the 10,000 years advocated by the young earth creationists. The Earth must be at least 740,000 years old.

2) The oldest rocks on Earth, found in western Greenland, have been dated by four independent radiometric dating methods at 3.7 - 3.8 billion years. Rocks 3.4 - 3.6 billion years in age have been found in southern Africa, Western Australia, and the Great Lakes region of North America. These oldest rocks are metamorphic rocks but they originate as lava flows and sedimentary rocks. The debris from which the sedimentary rocks formed must have come from even older crustal rocks. The oldest dated minerals (4.0 - 4.2 billion years) are tiny zircon crystals found in sedimentary rocks in Western Australia [2].

3) The oldest Moon rocks are from the lunar highlands and were formed when the early lunar crust was partially or entirely molten. These rocks, of which only a few were returned by the Apollo missions, have been dated by two methods at between 4.4 - 4.5 billion years in age [2].

4) The majority of the 70 well-dated meteorites have ages of 4.4 - 4.6 billion years. These meteorites, which are fragments of asteroids and represent some of the most primitive material in the solar system, have been dated by 5 independent radiometric dating methods [2].

5) The "best" age for the Earth is based on the time required for the lead isotopes in four very old lead ores (galena) to have evolved from the composition of lead at the time the Solar System formed, as recorded in the Canyon Diablo iron meteorite. This "model lead age" is 4.54 billion years [2].

6) The evidence for the antiquity of the Earth and Solar System is consistent with evidence for an even greater age for the Universe and Milky Way Galaxy [2].

A) The age of the Universe can be estimated from the velocity and distance of galaxies as the universe expands. The estimates range from 7 to 20 billion years, depending on whether the expansion is constant or is slowing due to gravitational attraction [2].

B) The age of the Galaxy is estimated to be 14 - 18 billion years from the rate of evolution of stars in globular clusters, which are thought to be the oldest stars in the Galaxy. The age of the elements in the Galaxy, based on the production ratios of osmium isotopes in supernovae and the change in that ratio over time due to radioactive decay, is 8.6 - 15.7 billion years. Theoretical considerations indicated that the Galaxy formed within a billion years of the beginning of the Universe [2].

C) Combining the data from A) and B), the "best, that is, most consistent, age of the universe is estimated to be 14 - 17 billion years" [2].

Many researchers try to determine the age for the Earth and the rest of the solar system along years. They claim various ideas and use different methods to estimate this factor. But Earth's exact age could not prove by a logical computational scientific method and this remains one of the sorest troubles and questions in basis and applied science and also in scientific society today.

After above brief historical review of studies you must ask these questions: What's the real exact age of the earth? And how do we know it? And also can compute and prove exact age of the earth directly from its basilar specifications or main universe's features?

Defining a factor directly and independently from the earth that indicates earth's strength limit can response to more different unsolved problems and questions accurately and also help to showing and finding some extend connections of all universe constitutive components and adjusting different scientific theories. Deliberate on strength limit parameter and implement a basis extendable work is necessary therefore use of this new parameter can prove and influence on accuracy of determinant calculations such as age of the earth, galaxy and universe calculation, existence of gravitational particles and measurements of the exact gravitational and neutral particle's life time (like neutron) and various related projects and also has many applied benefits.

2. Description of Strength Limit of Earth

Earth's strength limit or strength limit of earth (with E.S.L or S.L.E abbreviations) is an important basis parameter in earth description which indicated mathematically as $X_{C-Earth}$. Generally, $X_{C-Earth}$ is a parameter that means when cohesion of materials changed with different reasons like structural problems, tectonic actions, geological structures, engineering geology problems and etc., in this state if cohesion values between particles are less than about 65 percent (exactly equal to 64.712157172243419172410449319661%) of own first value then instability changes begin. In this condition micro cracks create and develop and finally different results of instability such as failure occur (for example slopes in mines or in side of the roads or in luminaries). In fact $X_{C-Earth}$ is an Actual Multi Interaction Resistance (A.M.I.R) or strength in existence. That means this value obtained from considering different parameters and factors involves in existence and its interaction together. $X_{C-Earth}$ indicated that what values remain active from 1 MPa or 1 percent of any strength or set of all resisting forces. This parameter is constant for earth from one view point which called cohesion constant limit number ($X_{C-Constant}$ or X_{CCLN}) and on the other hand is variable that called cohesion variable limit number ($X_{C-variable}$ or X_{CVLN}) that will discuss in a detailed separate paper. In other words, $X_{C-Earth}$ is the cohesion value and strength limit of different materials, particles, elements, factors and parameters in earth and the stability limit of earth and all constitutive particles and elements of earth and earth's visible or invisible constitutive components. $X_{C-Constant}$ is the cohesion constant limit number or earth's strength limit in presence of disturbance factors like different stresses. In fact earth's strength limit shows the equilibrium (equilibrium limit) between resisting and disturbance forces in earth during universe stability. Instabilities of structures like earth (and etc.) begin when their strength limit parameter decreases continuously and reach to $[(X_{C-Earth}) \times 100]\%$, $\left([\frac{X_{C-Earth}+G.S.Ns}{2}] \times 100\right)\%$ and then to (Golden section numbers) % of their first own value. Thus in critical stages strength limit parameter pass from [(1-G.S.Ns) × 100] % and $\left([1-\frac{X_{C-Earth}+G.S.Ns}{2}] \times 100\right)\%$ of its primary value and ruptures begin in structures (The Golden section number is 0.6180339887). Therefore complete decomposing times and procedures occur during and after that strength limit parameter reduce yet and its value pass from [(1-$X_{C-Earth}$) ×100] % of preliminary value. Strength limit variations diagram realize from nature and exactly from shape of the mountains. According to abovementioned can define strength limit parameter for every structure and everything in various fields of science.

3. Definitions of Strength Limit of Earth ($X_{C-Earth}$)

Determining the strength limit of earth parameter can organizes and also adjusts and completes more theories and response to different unsolved questions in various fields of sciences.

3.1. Independent Definition of $X_{C-Earth}$ by Area Density and Standard Gravity for Earth

Gravity is one of the main vital tensional forces that impress materials in the world. It is one of the regularizer forces of all things in universe. Gravity of earth signifies to space and time and fundamental parameters. Strength limit factor of earth is the strength of gravity forces and the structural resistance of gravitational fields. Eventually, strength limit of earth indicates the equilibrium or equilibrium limit between resisting and disturbing forces in universe gravitational field and plays considerable and indispensable roles in universe overall stability field. Also Napier's or Euler's constant is a key number in existence description. Therefore can use of gravity and Napier's constant in definitions of strength limit of earth and age of the earth calculations. Strength limit number of the earth or cohesion constant limit number of the earth with use of standard gravity and Euler's constant is given by below equation:

$$X_{C-Constant} = X_{C-earth} = \frac{g_0}{e^e} = g_0 \times \frac{1}{e^e} = gravity \times density$$
$$= 0.647121571722434191724104493196 61(\text{MPa or \%}) \quad (1)$$

where, g_0 is the standard gravitational acceleration or Earth's standard surface gravity that's equal to 9.80665 m/s^2 [6] [7] and e is the simply Euler's constant or Napier's constant.

Equation (1) represent that strength limit of earth is equal to 0.647121571722434191724104493196 61 (MPa or %) from every 1 (MPa or %) unit scale of any strength forces or set of all kind of resisting forces or also this parameter is equal to 64.712157172243419172410449319661 (MPa or %) in every 100 (MPa or %) unit scale of any strength forces or set of all kind of resisting forces. In other words, earth's strength limit is equal to 0.647121571722434191724104493196 61 MPa or 64.712157172243419172410449319661% from any strength forces or set of all resisting forces.

Standard gravity according to Equation (1) obtained from below relation:

$$g_0 = e^e * X_{C-earth} = 9.80664999999999999999999999999 \frac{m}{s^2} \cong 9.80665 \frac{m}{s^2}. \quad (2)$$

Therefore Equation (2) is detailed as follows:

$$g_0 = X_{C-earth} \times e^e = X_{C-earth} \times \sqrt{e^e} \times \sqrt{e^e} = \frac{X_{C-earth}}{\frac{1}{e^e}} = \frac{X_{C-earth}}{\frac{1}{\sqrt{e^e} \times \sqrt{e^e}}} = \frac{Strength\ \ Limit\ \ of\ Earth}{Area\ \ Density}. \quad (3)$$

where,

- $X_{C-earth}$ is the cohesion constant limit number of earth or Strength limit parameter or strength of existence global gravitation (in MPa),
- e is Napier's number,
- e^e is equal to 15.154262241479264189760430272 63 m^2/Ggr which means every value of gravitation is effect on e^e square meter of every parts of earth or every things near the earth with 1 Ggr mass. In-fact e^e is the impact surface area of gravity on 1 Ggr mass,
- $\frac{1}{e^e}$ is area density (A.D or D_A) or surface density (S.D or D_S) and equal to 0.065988035845312537 0679018759685 Ggr/m^2 65.988035845312537 0679018759685 ton/m^2 or in other words, $\frac{1}{e^e}$ is the gravitational impact coefficient (g.I.C) or gravitational exponential coefficient (g.E.C) or exponential coefficient of gravitation (EC_g) that means every value of gravitation is effects on 0.065988035845312537 0679018759685 Ggr in 1 square meter of every parts of earth or every things near the earth. In fact $\frac{1}{e^e}$ is the impact coefficient of gravitation on earth's strength factor (IC_g) or earth's component strength factor. This factor is the gravitation's equivalency density ($g_{eq.d}$) or equivalency density of gravitation (EqD_g) and on the other hand this is gravitational exponential impact coefficient (g.E.I.C) or gravitation's exponential impact coefficient (g_{eic}).
- Area density is 65.988035845312537 0679018759685 ton in one square meter and infact is equal to 1000 ton (1 Ggr) in 15.154262241479264189760430272 63 square meter (m^2). Then area density is defined by:

$$Area\ Density = Surface\ Density = \frac{1}{e^e} = \frac{1}{\sqrt{e^e} \times \sqrt{e^e}} = \frac{X_{C-earth}}{g_0} = \frac{Strength\ \ Limit\ \ of\ Earth}{Standard\ \ \ Gravity}. \quad (4)$$

- Area density illustrates the impact area of gravity forces cells (impact components cells) in continuous entire world. This shows the impact components cells of gravitational waves and components cells of impact area. Surface density calculated from specifications of gravitational impact surface and gravitational particles.

$$Area\ Density = Surface\ Density = S.D = D_S = \frac{Mass}{Surface\ \ Area} = \frac{Unit\ \ Mass}{Unit\ \ Surface\ \ Area}. \quad (5)$$

$$Area\ Density = Surface\ Density = A.D = D_A = \frac{Mass\ \ Scale\ \ Unit}{Surface\ \ Area\ \ Scale\ \ Unit} = \frac{M}{x^2}. \quad (6)$$

- Where,
- A.D or D_A or S.D or D_S is area density or surface density. A.D is a local surface density or impact surface density. On the other word is surface density for 1 Ggr unit mass scale and infact is the area density of gravitational particles according to impact surface area,
- M is Unit mass of gravitational particles and equal to 1 Ggr = 1 Giga gram or M is Unit mass of gravitational particles impact components cells,
- X^2 is Impact surface area of gravitational particles according to area scale unit. It's very important that know

this factor is the staple impact surface area of gravitational waves in presence of gravitational forces with contemplate of gravitational particle(s) properties by surface area scale unit and mass scale unit.

- X is local relocation value of gravitational particles in impact surface during their life time (or during life time of process). X is Unit length or longitudinal stir of gravitational particles during their life time in impact surface limit or longitudinal limit of gravitational particles in their components impact surface during movement's life time. Also X is longitudinal and latitudinal stir of the impact components cells of gravitational waves (even during life time of gravitational particles) or longitudinal and latitudinal stir of components cells of impact area and equal to $\sqrt{e^e} = 3.89284757490956280438905335078 28$ Gm,
- X determined by:

$$X = \sqrt{\frac{\mathrm{M}}{\mathrm{Area\ \ Density}}} = \sqrt{e^e} = 3.89284757490956280438905335078 28 \text{ Gm}. \quad (7)$$

- Gravitational particle(s) leads to equivalency in impact world. Values of unit length, time and force of gravitational particles are obtained by:

$$X = \sqrt{\frac{\mathrm{M}}{\mathrm{Area\ \ Density}}} = \frac{Ft^2}{\mathrm{M}} = \sqrt{e^e} = 3.89284757490956280438905335078 28 \text{ Gm}. \quad (8)$$

$$t^2 = \frac{MX}{F} = \sqrt{e^e} = 3.89284757490956280438905335078 28 \text{ S}^2. \quad (9)$$

$$t = \frac{MV}{F} = \sqrt{\frac{MX}{F}} = \sqrt[4]{e^e} = 1.97303004916538531779900455217 02 \text{ second}. \quad (10)$$

$$V = \sqrt[4]{e^e} = 1.97303004916538531779900455217 02 \ \frac{\mathrm{Gm}}{\mathrm{s}} \quad (11)$$

$$F = \frac{MV}{t} = \frac{MX}{t^2} = \frac{1\times\sqrt{e^e}}{\sqrt{e^e}} = 1 \text{ GN}. \quad (12)$$

On the other word it is a component or frustum recycling time of gravitational particles (components recycle or component recycles).

Where,

t = Unit time = recycle time of gravitational particles = recycle time of gravitational particles in component impact area of gravity forces cells,

F = Unit force = Unit force in gravitational particle's process according to unit mass, time and velocity scale = Local force value = Impresser force = Total Impressive force = Impressive force on every particle = Total Impressive forces involve in life time of gravitational particles (life time of gravitational particle's process) = Effecting force by gravitational particles on area = Effecting forces on gravitational particles by area = 1 newton force in a large surrounding area = Total Involving forces in life time of gravitational particles (life time of gravitational particle's process),

V = Unit velocity of gravitational particle's process according to unit mass, time and force scale.

In big scale impact area (non-component impact area) x is equal to 3.89284757490956280438905335078 28 Giga meter and unit velocity is equal to 1.97303004916538531779900455217 02 Gm/s.

3.2. Definition of $X_{C-Earth}$ by Newton's Second Law of Motion and Newton's Law of Universal Gravitation and Standard Gravity

Briefly Definition of Newton's Second Law is the acceleration ("a") of a body is parallel and directly proportional to the net force F and inversely proportional to the mass m [8].

Newton's second law of motion expresses as [9]-[11]:

$$\mathrm{F} = \mathrm{ma} = \mathrm{mg}, \quad (13)$$

And newton's law of universal gravitation between earth and every point mass on earth or in distance from earth indicated that [10] [12]-[14]:

$$\mathrm{F} = \frac{\mathrm{M}\times\mathrm{G}\times\mathrm{E}}{\mathrm{R}^2}, \quad (14)$$

According to Newton's second law of motion and new ton's law of universal gravitation below relation is feasible [Adapted from [9]-[14]]:

$$F = mg = \frac{M \times G \times E}{R^2}, \tag{15}$$

Standard gravity is given by below equation with deleting m and M from 2 sides of Equation (6):

$$g_0 = \frac{G \times E}{R^2}, \tag{16}$$

Below relation is obtained from Equation (1) and Equation (16):

$$g_0 = X_{C-earth} \times e^e = \frac{X_{C-earth}}{\frac{1}{e^e}} = \frac{G \times E}{R^2}, \tag{17}$$

The mass of the earth is equal to:

$$E = ED \times V_{Earth}, \tag{18}$$

where,

- F is the force between the masses (in N),
- G is the gravitational constant that's approximately equal to 6.67384×10^{-11} $N \cdot m^2 \cdot kg^{-2}$,
- E is the mass of the earth that's equal to $5.958692779113673687112666770554 9 \times 10^{24}$ Kg,
- M is the every point mass (in Kg),
- R is the distance between the masses (in m),
- ED is the earth density (in Kg/m^3),
- V_{earth} is the volume of earth (in m^3).

Then, according to Equation (17) and Equation (18) cohesion constant limit number of the earth with impact of earth density is written as:

$$X_{C-Earth} = \frac{G \times E}{R^2 \times e^e} = \frac{G \times ED \times V_{Earth}}{R_{Earth}{}^2 \times e^e} = 0.647121571722434191724104493196 61. \tag{19}$$

Strength limit factor can be derive and clarify many fundamental laws from substantial sciences such as laws which put parallel beside Newton's notable laws.

Newton's law has since been superseded by Einstein's theory of general relativity [8], but Equation (19) and this article will demonstrate must lionize and continue to be discover about this notable approximation of the effects of gravity.

3.3. Definition of $X_{C-Earth}$ by Earth's Gravity Variation with Altitude

The following formula approximates the Earth's gravity variation with altitude [15] [16]:

$$g_h = g_0 \left(\frac{r_e}{r_e + h}\right)^2, \tag{20}$$

where,

- g_h is gravity at height h above sea level,
- g_0 is standard gravity,
- r_e is radius of earth,
- h is height from sea level.

According to Equation (20) standard gravitational acceleration obtained by [Adapted from [15] [16]]:

$$g_0 = \frac{g_h}{\left(\frac{r_e}{r_e + h}\right)^2}, \tag{21}$$

Also, according to Equation (3) and Equation (21) have:

$$g_0 = X_{C-earth} \times e^e = \frac{g_h}{\left(\frac{r_e}{r_e + h}\right)^2}. \tag{22}$$

Therefore, according to Equation (22) cohesion constant limit number of the earth is derived from influence of Earth's gravity variation with altitude as follows:

$$X_{C-earth} = \frac{g_h}{\left(\frac{r_e}{r_e + h}\right)^2 \times e^e} = \frac{g_h}{\left(\frac{r_e}{r_e + h}\right)^2} \times \frac{1}{e^e}. \tag{23}$$

3.4. Determination of $X_{C-Earth}$ With Age of the Earth

It's necessary to mentioned that strength limit and standard gravity in above are old values and also all above

formulas are true based on old and present values of standard gravity. Old earth's strength limit according to old age of the earth is given by follow formulae:

$$X_{C-Earth,Old} = \ln\left[\left(\frac{(Age\ of\ the\ earth_{Old})\times VVR^{Old}{}_{X_{C-Earth}}}{\text{PGCOTR}}\right)+1\right] = \ln\left[\left(\frac{(AOE_{Old})\times 2}{10^{10}}\right)+1\right]. \quad (24)$$

Then present value of earth's strength limit obtained by below relations:

$$X_{C-Earth,Now} = \ln\left[\left(\frac{(Age\ of\ the\ earth_{Exact})\times VVR^{Now}{}_{X_{C-Earth}}}{\text{PGCOTR}}\right)+1\right]. \quad (25)$$

$$X_{C-Earth,Now} = \ln\left[\left(\frac{(AOE_{Exact})\times 2.028627807733590978178434736 7861}{10^{10}}\right)+1\right]. \quad (26)$$

$$X_{C-Earth,Now} = \ln\left[\left(\frac{(AOE_{Exact})\times\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}{10^{10}}\right)+1\right]. \quad (27)$$

Features of new factors in Equation (24), Equation (25), Equation (26) and Equation (27) are defined in Part 4.1.

4. Determining Age of the Earth

4.1. Determining Age of the Earth by Strength Limit Number of the Earth

The strength limit of earth is a high priority factor in earth description and knowing it has many practical advantages. Strength limit will be used to predicts real age and decompose time of earth, stars, planets and galaxies. Determining the accurate age of the earth from cohesion constant limit number can be adjusting more theories in sciences. Old age of the earth according to Equation (24) calculated directly from strength limit of earth by follow relation:

$$\text{Age of the earth}_{\text{Old}} = \text{AOE}_{\text{Old}} = \frac{[(e^{X_{C-Earth,Old}})-1]\times\text{PGCOTR}}{\text{VDVR}^{\text{Old}}{}_{X_{C-Earth}}} = \frac{[(e^{X_{C-Earth,Old}})-1]\times 10^{10}}{2}. \quad (28)$$

$$\text{Age of the earth}_{\text{Old}} = \text{AOE}_{\text{Old}} = 4550175049.8945017745329167415032 \text{ year.}$$

where, $\text{Age of the earth}_{\text{Old}}$ or AOE_{Old} is age of the earth according to old standard gravity, $X_{C-Earth,Old}$ is the cohesion constant limit number of earth or strength limit parameter of earth or strength of existence global gravitation according to old standard gravity and equal to 0.647121571722434191724104493196 61 MPa, PGCOTR or PGSCOTR is Principle great changes occurrence time range in earth or principle great structural changes occurrence time range or time range of great structural variations occurrence possibility or also is changeable or mutation revolutionary span and equal to 1010 Year, $\text{VDVR}^{\text{Old}}{}_{X_{C-Earth}}$ is Variations distance value range of earth's strength limit in 10 billion year according to old standard gravity and equal to 2 Km.

$\text{Age of the earth}_{\text{Old}} = 1665364068261.3876494790475273902$ Days
$\text{Age of the earth}_{\text{Old}} = 39968737638273.303587497140657364$ Hour
$\text{Age of the earth}_{\text{Old}} = 2398124258296398.2152498284394418$ Minute
$\text{Age of the earth}_{\text{Old}} = 143887455497783892.91498970636651$ Seconds

Above age of the earth calculated according to old standard gravity in its time. Then exact present age of the earth according to present value of earth's strength limit is equal to:

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times\text{PGCOTR}}{VVR^{Now}{}_{X_{C-Earth}}} = \frac{\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times 10^{10}}{2.028627807733590978178434736 7861}. \quad (29)$$

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times 10^{10}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \quad (30)$$

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = 4.7303652362904 \text{ Billion Year.}$$

where, $Age\ of\ the\ earth_{Exact}$ or AOE_{Exact} is Accurate or exact age of the earth according to present standard gravity at present time, $X_{C-Earth,Now}$ is the cohesion constant limit number of earth or strength limit parameter of earth or strength of existence global gravitation according to present standard gravity and equal to 0.672748048803173225520814894 2682 MPa, PGCOTR is Principle great changes occurrence time range in

earth or time range of great structural variations occurrence possibility or also is changeable or mutation revolutionary span and equal to 10^{10} Year, $VVR^{Now}{}_{X_{C-Earth}}$ is Variations value range of earth's strength limit in 10 billion year according to present standard gravity and equal to 2.028627807733590978178434736786 1 Km, A.D is area density or surface density (S.D or D_S) and equal to 0.065988035845312537070 7679018759685 Ggr/m^2 ≈ 0.066 Ggr/m^2.

4.2. Determining Age of the Earth by Distance That Light Travel in One Year

Distance that light travel in vacuum in one Julian year (not Gregorian year) and a defined speed of light of 299792458 m/s [17] [18] is directly proportional to age of the earth. Also age of the earth get by distance that light travel in one year as:

$$AOE_{Old} = \frac{\text{Distance}^{Old}{}_{Light\sim 1\ year} \times VOTR^{Old}{}_{\text{Distance}\ Light\sim 1\ year}}{D^{Old}{}_{Light-V}} = \frac{\text{Distance}^{Old}{}_{Light\sim 1\ year} \times 10^{-3}}{2}. \quad (31)$$

$$AOE_{Old} = \frac{\text{Distance}^{Old}{}_{Light\sim 1\ year} \times 10^{-3}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 68}\right)}. \quad (32)$$

where, $Age\ of\ the\ earth_{Old}\ or\ AOE_{Old}$ is age of the earth according to old standard gravity, $\text{Distance}^{Old}{}_{Light\sim 1\ year}$ is value of distance that light travel in one year according to old standard gravity and equal to 9.100350099789003549065833483006 4×10^{12} Km, $D^{Old}{}_{Light-V}$ is Variations rate of distance that light travel in 0.001 year or 0.36525 day or 8.784 hour or 527.04 min or 31622.4 second according to old standard gravity and equal to 2 Km, $VOTR^{Old}{}_{\text{Distance}\ Light\sim 1\ year}$ is Variations occurrence time range of distance that light travel in one year according to old standard gravity and equal to 10^{-3} year. This means in light travel during one year according to old standard gravity, time range of occurrence of distance variations is 10^{-3} year (distance variations during light travel in one year occur in 10^{-3} year), A.D is area density or surface density (S.D or D_S) and equal to0.065988035845312537070 7679018759685 Ggr/m^2.

$$\frac{\text{Distance}^{Old}{}_{Light\sim 1\ year}}{AOE_{Old}} = \frac{D^{Old}{}_{Light-V}}{VOTR^{Old}{}_{\text{Distance}\ Light\sim 1\ year}}. \quad (33)$$

Fraction (33) is the ratio between variations rate of distance that light travel in 0.001 year to variations occurrence time range of distance that light travel in one year (according to old standard gravity).

Distance that light travel in one year value calculated according to old standard gravity in its time. Then exact age of the earth according to present values of distance that light travel in one year is equal to:

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{\text{Distance}^{Now}{}_{Light\sim 1\ year} \times VOTR^{Now}{}_{\text{Distance}\ Light\sim 1\ year}}{D^{Now}{}_{Light-V}}. \quad (34)$$

$$AOE_{Exact} = \frac{\text{Distance}^{Now}{}_{Light\sim 1\ year} \times 1.014313903866795489089217368393 1\ *10-3}{2.028627807733590978178434736786 1}. \quad (35)$$

$$AOE_{Exact} = \frac{\text{Distance}^{Now}{}_{Light\sim 1\ year} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right) \times 10^{-3}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \quad (36)$$

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = 4.7303652362904 \text{ Billion Year.}$$

where, $Age\ of\ the\ earth_{Exact}\ or\ AOE_{Exact}$ is Accurate or exact age of the earth according to present standard gravity at present time and exactly equal to 4730365236.2904000000000000000002 Year, $\text{Distance}^{Now}{}_{Light\sim 1\ year}$ is value of distance that light travel in one year according to present standard gravity (M.S.A., 2011) and equal to 9.460730472580800 × 10^{12} Km [19], $D^{Now}{}_{Light-V}$ is Variations rate of distance that light travel in one year according to present standard gravity in 1.014313903866795489089217368393 1 × 10^{-3} year and equal to 2.028627807733590978178434736786 1 Km, $VOTR^{Now}{}_{\text{Distance}\ Light\sim 1\ year}$ is Variations occurrence time range of distance that light travel in one year according to present standard gravity based on 10 billion year principle great structural changes occurrence time range in a defined variations rate of 2.028627807733590978178434736786 1 Km and equal to 1.014313903866795489089217368393 1*10^{-3} year, A.D is area density or surface density (S.D or D_S) and equal

to 0.065988035845312537070679018759685 Ggr/m^2.

Also exact age of the earth according to 10^{-3} year variations occurrence time range of distance that light travel in one year is derived from follow relation:

$$AOE_{Exact} = \frac{\text{Distance}^{\ Now}{}_{Light\sim 1\ year} \times VOTR^{Now}{}_{\text{Distance}\ Light\sim 1\ year}}{D^{Now}{}_{Light-V}} = \frac{\text{Distance}^{\ Now}{}_{Light\sim 1\ year} \times 10^{-3}}{1.9999999999999999999999999999999}. \quad (37)$$

$$AOE_{Exact} = \frac{\text{Distance}^{\ Now}{}_{Light\sim 1\ year} \times 10^{-3}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433266}\right)}. \quad (38)$$

where, $D^{Now}{}_{Light-V}$ is Variations rate of distance that light travel in one year according to present standard gravity in variations occurrence time range 10^{-3} year and equal to1.9999999999999999999999999999999 Km, $VOTR^{Now}{}_{\text{Distance}\ Light\sim 1\ year}$ is Variations occurrence time range of distance that light travel in one year according to present standard gravity based on 9858880926.1883561954017773864286 year occurrence time range of principle great structural changes and a defined variations rate of 1.9999999999999999999999999999999 Km ≈ 2 Km and equal to 10^{-3} year, A.D is area density or surface density (S.D or D_S) and equal to 0.065988035845312537070679018759685 Ggr/m^2.

Old and present values of variations rate of distance that light travel in one year in a defined variations occurrence time range of 100 million year illustrates that variations rate factor will reduce by increasing age of the earth during time passing.

4.3. Determining Age of the Earth by Thickness of Homosphere

The atmosphere of earth is retained by Earth's gravity and protects life on Earth by absorbing ultraviolet solar radiation, warming the surface through heat retention (greenhouse effect), and reducing temperature extremes between day and night (the diurnal temperature variation) [20]. The homo sphere is defined by whether the atmospheric gases are well mixed. The surfaced-based homo sphere includes the troposphere, stratosphere, mesosphere, and the lowest part of the thermosphere, where the chemical composition of the atmosphere does not depend on molecular weight because the gases are mixed by turbulence [21]. This relatively homogeneous layer ends at the turbo pause which is found at about 100 km (62 mi; 330,000 ft.), which places it about 20 km (12 mi; 66,000 ft.) above the mesopause [22]. Ecosystem, climate, temperature and all specifications changes can be predict by study on variations of gases layers features surrounding the earth. Exact age of the earth according to old and present values of thickness of homo sphere is as follow:

$$Age\ of\ the\ earth_{Old} = AOE_{Old} = \frac{TH_{Old} \times VTR^{Old}{}_{th}}{TH^{Old}{}_{V}} = \frac{TH_{Old} \times 10^8}{2}. \quad (39)$$

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{TH_{Now} \times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{TH_{Now} \times 1.0143139038667954890892173683931 \times 10^8}{2.028627807733590978178434736786 1}. \quad (40)$$

$$Age\ of\ the\ earth_{Exact} = \frac{TH_{Now} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.00522845975780796198194651194269}\right) \times 10^8}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.26022305719176147124351862627535}\right)}. \quad (41)$$

where, $Age\ of\ the\ earth_{Exact}\ or\ AOE_{Exact}$ is Accurate or exact age of the earth according to present standard gravity at present time and equal to 4.7303652362904 billion year, $Age\ of\ the\ earth_{Old}\ or\ AOE_{Old}$ is age of the earth according to old standard gravity, TH_{Old} is value of thickness of homo sphere according to old standard gravity in variation time range of 100 million year and equal to 91.003500997890035490658334830064 Km, TH_{Now} is value of thickness of homo sphere according to present standard gravity in variation time range of 101431390.3866795489089217368393 1 million year and equal to 94.60730472580800 Km and exactly equal to 94.607304725807999999999999999995 Km, $TH^{Old}{}_{V}$ is Thickness of homo sphere variations rate in occurrence range (possibility occurrence range) of 100 million year according to old standard gravity and equal to 2 Km, $TH^{Now}{}_{V}$ is thickness of homo sphere variations rate in occurrence range (possibility occurrence range) of 101431390.3866795489089217368393 1 million year (in a defined variations time range) according to present standard gravity and equal to 2.028627807733590978178434736786 1 Km, $VTR^{Old}{}_{th}$ is Variations time range of thickness of homo sphere according to old standard gravity and equal to10^8 year, $VTR^{Now}{}_{th}$ is Variations time range of thickness of homo sphere according to present standard gravity in a defined variations rate and

equal to1.014313903866795489089217368393 1*10^8 year, A.D is area density or surface density (S.D or D_S) and equal to 0.065988035845312537070 7679018759685 Ggr/m^2.

Also exact age of the earth according to 10^8 year variations time range of thickness of homo sphere is derived from follow equation:

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{TH_{Now} \times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{TH_{Now} \times 10^8}{1.999999999999999999999999999999}. \quad (42)$$

$$Age\ of\ the\ earth_{Exact} = AOE_{Exact} = \frac{TH_{Now} \times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{TH_{Now} \times 10^8}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right)}. \quad (43)$$

where, $TH^{Now}{}_{V}$ is Thickness of homo sphere variations rate in occurrence range (possibility occurrence range) of 100 million year according to present standard gravity and equal to 1.999999999999999999999999999999 Km, $VTR^{Now}{}_{th}$ is Variations time range of thickness of homo sphere according to present standard gravity in a defined variations rate of 1.999999999999999999999999999999 Km and equal to 10^8 year.

Old and present values of Thickness of homo sphere variations rate in occurrence range of 100 million year illustrates that variations rate factor reduce along increasing lapse of time.

4.4. Determining Age of the Earth by Strength Variations Coefficient

Cohesion limit is a strength factor and can't overleap from its variation's consequential influences. The other relations between age of the earth and strength limit number of earth are as follows, meanwhile all below formulas are true based on old and present standard gravity:

$$\mathrm{X_{C-earth}} = AOE \times \text{þ}. \quad (44)$$

$$\frac{\mathrm{g_0}}{\mathrm{e^e}} = AOE \times \text{þ}. \quad (45)$$

where, $\mathrm{X_{c\text{-}earth}}$ is strength limit number of earth, AOE is the age of the earth's abbreviation, þ is strength variations coefficient from age viewpoint (strength variations coefficient in 10^{10} year or strength variations coefficient per every unit of principle great changes occurrence time range (principle great structural changes occurrence time range in universe) or strength variations coefficient per time range of great structural variations occurrence possibility or strength variations coefficient in mutation revolutionary span or strength variations coefficient in changeable revolutionary span of 10^{10} Year or strength variations coefficient in (of) 10^{10} Year) or strength variations coefficient with regard to overall age of the earth and equal to $þ = 1.422190497346773612805792631933 5 \times 10^{-10}$ in $\frac{\text{MPa}}{\text{Year}} = \frac{\text{MN}}{\text{m}^2\text{Year}} = \frac{\text{Ggr}}{\text{Year m s}^2}$. If þ is yearly, annum or annual strength variations coefficient then purpose of year is 10^{10} Year of mutation changes revolutionary span.

Standard gravity in this condition is equal to:

$$\mathrm{g_0} = AOE \times \text{þ} \times \mathrm{e^e}. \quad (46)$$

Strength limit number is unified of more factors and parameters. Precise ponder and use of gravity and strength limit of earth specifications in fundamental works increase accuracy of determining calculations such as age of the earth calculations. Therefore age of the earth is written by:

$$AOE = \frac{\mathrm{X_{C-earth}}}{\text{þ}} = \frac{\mathrm{g_0}}{\text{þ} \times \mathrm{e^e}}. \quad (47)$$

Strength variations coefficient is obtained by:

$$\text{þ} = \mathrm{S_{\sim}} \times \frac{1}{\text{PGOCTR}}. \quad (48)$$

$$\text{Gravitational Acceleration Strength Factor} = \mathrm{S_{\sim}} \cong \frac{1}{7} \times \mathrm{g_0}. \quad (49)$$

$$\text{GAF} = \text{GAFF} = \text{GASF} = S_{\sim} = \frac{\mathrm{g_{0-Old}}}{6.8954545950737275233867489362566}. \quad (50)$$

$$S_{\sim} = \frac{1}{6.8954545950737275233867489362566} \times \mathrm{g_{0-Old}} = ID_{\mathrm{g_{0-Old}}} \times \mathrm{g_{0-Old}}. \quad (51)$$

$$ID_{\mathrm{g_{0-Old}}} = \frac{1}{6.8954545950737275233867489362566}. \quad (52)$$

$$S_{\sim} = \frac{1}{7.168519528872174629302802485075 5} \times g_{0-Now} = ID_{g_{0-Now}} \times g_{0-Now}. \quad (53)$$

$$ID_{g_{0-Now}} = \frac{1}{7.168519528872174629302802485075 5}. \quad (54)$$

$$þ = ID_{g_{0-Now}} \times g_{0-Now} \times \frac{1}{PGOCTR}. \quad (55)$$

$$þ = ID_{g_{0-Old}} \times g_{0-Old} \times \frac{1}{PGOCTR}. \quad (56)$$

$$AOE_{Exact} = \frac{X_{C-Eart\ h,Now}}{þ}. \quad (57)$$

$$AOE_{Exact} = \frac{g_{0-Now}}{ID_{g_{0-Now}} \times g_{0-Now} \times \frac{1}{PGOCTR} \times e^{e}} = \frac{PGOCTR}{ID_{g_{0-Now}} \times e^{e}}. \quad (58)$$

$$AOE_{Old} = \frac{X_{C-Eart\ h,Old}}{þ}. \quad (59)$$

$$AOE_{Old} = \frac{g_{0-Old}}{ID_{g_{0-Old}} \times g_{0-Old} \times \frac{1}{PGOCTR} \times e^{e}} = \frac{PGOCTR}{ID_{g_{0-Old}} \times e^{e}}. \quad (60)$$

Gravitational Acceleration Strength Factor = 1.42219049734677361280579263193 35 MPa.

Where, $S_{\sim}$ is the Gravitational Acceleration Strength Force Factor (GASF) or gravitational acceleration strength factor (GASF) or gravitational acceleration force factor (GAFF) or gravitational acceleration factor (GAF) or value of gravitational acceleration strength variations according to standard gravity or gravitational acceleration strength force variations range in MPa and equal to 1.42219049734677361280579263193 35 MPa, g_{0-Old} is the old standard gravity and equal to 9.80664999999999999999999999 m/s^2, g_{0-Now} is the present value of standard gravity and equal to 10.19500035400677730101482593047 7 m/s^2, þ is strength variations coefficient, $ID_{g_{0-Now}}$ is the gravitational acceleration strength force impact density on present value of standard gravity or is the effective density on strength variations coefficient according to present standard gravity or is the gravitational acceleration strength impact coefficient on present value of standard gravity. In fact this factor is the impact coefficient of gravitational acceleration strength variations factor on present value of standard gravity or is the density of gravitational acceleration strength variations (factor) on present value of standard gravity or is the impact equivalent density of gravitational acceleration strength variations on present value of standard gravity or is the impact equivalent density on present standard gravity or is the strength variations range of the gravitational acceleration on present standard gravity. Also this is the impact coefficient of gravitation on strength variations range according to present standard gravity or is the impact density coefficient on gravitational strength variations range according to present standard gravity or is the impact coefficient of present standard gravity on gravitational acceleration strength variations or is the effective coefficient on (of) present standard gravity for determining the gravitational acceleration strength variations coefficient according to principle great structural changes occurrence time range in universe and equal to 0.13949881784828314556486404266659 Ggr/m^2 or 139.49881784828314556486404266659 ton/m^2.

$ID_{g_{0-Old}}$ is the gravitational acceleration strength force impact density on old standard gravity or is the effective density on strength variations coefficient according to old standard gravity or is the gravitational acceleration strength impact coefficient on old value of standard gravity. In fact this factor is the impact coefficient of gravitational acceleration strength variations factor on old value of standard gravity or is the density of gravitational acceleration strength variations (factor) on old value of standard gravity or is the impact equivalent density of gravitational acceleration strength variations on old value of standard gravity or is the impact equivalent density on old value of standard gravity or is the strength variations range of the gravitational acceleration on old value of standard gravity. Also this is the impact coefficient of gravitation on strength variations range according to old standard gravity or is the impact density coefficient on gravitational strength variations range according to old value of standard gravity or is the impact coefficient of old value of standard gravity on gravitational acceleration strength variations or is the effective coefficient on (of) old standard gravity for determining the gravitational acceleration strength variations coefficient according to principle great structural changes occurrence time range in universe and equal to 0.14502307080876482925420940199543 Ggr/m^2 or 145.02307080876482925420940199543 ton/m^2.

$ID_{g_{0-Old}}$ in-fact is the impact density that effects on old standard gravity in computation of strength varia-

tions coefficient.

$ID_{g_{0-Now}}$ In-fact is the effective density on present standard gravity in computation of strength variations coefficient.

Moreover strength variations coefficient is obtained by decay constant of ^{87}Rb from Generic Radiometric Dating method as:

$$\text{þ} = D.C \times (\text{MEARS}) = \text{decay constant} \times (10\ \text{MPa}). \tag{61}$$

$$\text{Decay Constant}\ (\text{yr}^{-1}) = \frac{\text{þ}}{\text{MEARS}} = \frac{\text{þ}}{10\ \text{MPa}}. \tag{62}$$

Where, $D.C$ is the decay constant of gravitational particles. Currently exact value for the decay constant of ^{87}Rb is $1.42219049734677361280579263195 35\times 10^{-11}$ yr^{-1}. This value in fact is the constancy of decay rate quantity of the mother isotope of gravitational elements and particle's atoms.

MEARS is the minimal effective action and reaction unit of strength and equal to 10 MPa.

Also strength variations coefficient according to Equation (28), Equation (31), Equation (39) and Equation (47) and based on old values of thickness of homo sphere, distance that light travel in one year, age of the earth, standard gravity, and strength limit of earth is given by:

$$\text{þ} = \frac{TH^{Old}{}_{V} \times X_{C-Earth,Old}}{TH_{Old} \times VTR^{Old}{}_{th}} = \frac{2 \times X_{C-Earth,Old}}{TH_{Old} \times 10^{8}}. \tag{63}$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right) \times X_{C-Eart\ h,Old}}{TH_{Old} \times 10^{8}}. \tag{64}$$

$$\text{þ} = \frac{TH^{Old}{}_{V} \times \text{g}_{0-\text{Old}}}{TH_{Old} \times \text{e}^{\text{e}} \times VTR^{Old}{}_{th}} = \frac{2 \times \text{g}_{0-\text{Old}}}{TH_{Old} \times \text{e}^{\text{e}} \times 10^{8}}. \tag{65}$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right) \times \text{g}_{0-\text{Old}}}{TH_{Old} \times \text{e}^{\text{e}} \times 10^{8}}. \tag{66}$$

$$\text{þ} = \frac{D^{Old}{}_{Light-V} \times X_{C-Earth,Old}}{\text{Distance}^{Old}{}_{Light\rightsquigarrow 1\ year} \times VOTR^{Old}{}_{\text{Distance}\ \ Light\rightsquigarrow 1\ year}}. \tag{67}$$

$$\text{þ} = \frac{2 \times X_{C-Earth,Old}}{\text{Distance}^{Old}{}_{Light\rightsquigarrow 1\ year} \times 10^{-3}}. \tag{68}$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right) \times X_{C-Eart\ h,Old}}{\text{Distance}^{\ Old}{}_{Light\rightsquigarrow 1\ year} \times 10^{-3}}. \tag{69}$$

$$\text{þ} = \frac{D^{Old}{}_{Light-V} \times \text{g}_{0-\text{Old}}}{\text{Distance}^{Old}{}_{Light\rightsquigarrow 1\ year} \times VOTR^{Old}{}_{\text{Distance}\ \ Light\rightsquigarrow 1\ year} \times \text{e}^{\text{e}}} = \frac{2 \times \text{g}_{0-\text{Old}}}{\text{Distance}^{Old}{}_{Light\rightsquigarrow 1\ year} \times 10^{-3} \times \text{e}^{\text{e}}}. \tag{70}$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right) \times \text{g}_{0-\text{Old}}}{\text{Distance}^{\ Old}{}_{Light\rightsquigarrow 1\ year} \times 10^{-3} \times \text{e}^{\text{e}}}. \tag{71}$$

$$\text{þ} = \frac{VVR^{Old}{}_{X_{C-Earth}} \times X_{C-Earth,Old}}{\left[\left(e^{X_{C-Earth,Old}}\right) - 1\right] \times \text{PGCOTR}} = \frac{2 \times \text{g}_{0-\text{Old}}}{\left[\left(e^{X_{C-Earth,Old}}\right) - 1\right] \times 10^{10} \times \text{e}^{\text{e}}}. \tag{72}$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right) \times \text{g}_{0-\text{Old}}}{\left[\left(e^{X_{C-Eart\ h,Old}}\right) - 1\right] \times 10^{10} \times \text{e}^{\text{e}}}. \tag{73}$$

$$\text{þ} = \frac{X_{C-Earth,Old}}{AOE_{Old}} = \frac{\text{g}_{0-\text{Old}}}{AOE_{Old} \times \text{e}^{\text{e}}}. \tag{74}$$

In above equations $\text{g}_{0-\text{Old}}$ is the old standard gravity and equal to: 9.80664999999999999999999999 m/s^2.

Strength variations coefficient according to Equation (25), Equation (26), Equation (29), Equation (34), Equa-

tion (40), Equation (42) and Equation (47) and based on present values of thickness of homo sphere, distance that light travel in one year, age of the earth, standard gravity, and strength limit of earth is as follows:

$$\text{þ} = \frac{TH^{Now}{}_{V} \times X_{C-Earth,Now}}{TH_{Now} \times VTR^{Now}{}_{th}} = \frac{2.028627807733590978178434736786 1 \times X_{C-Earth,Now}}{TH_{Now} \times 1.014313903866795489089217368393 1 \times 10^{8}}. \quad (75)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right) \times X_{C-Eart\ h,Now}}{TH_{Now} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right) \times 10^{8}}. \quad (76)$$

$$\text{þ} = \frac{TH^{Now}{}_{V} \times X_{C-Earth,Now}}{TH_{Now} \times VTR^{Now}{}_{th}} = \frac{1.999999999999999999999999999999 \times X_{C-Earth,Now}}{TH_{Now} \times 10^{8}}. \quad (77)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right) \times X_{C-Eart\ h,Now}}{TH_{Now} \times 10^{8}}. \quad (78)$$

$$\text{þ} = \frac{TH^{Now}{}_{V} \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times VTR^{Now}{}_{th}} = \frac{2.028627807733590978178434736786 1 \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times 1.014313903866795489089217368393 1 \times 10^{8}}. \quad (79)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right) \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right) \times 10^{8}}. \quad (80)$$

$$\text{þ} = \frac{TH^{Now}{}_{V} \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times VTR^{Now}{}_{th}} = \frac{1.999999999999999999999999999999 \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times 10^{8}}. \quad (81)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right) \times \text{g}_{0-\text{Now}}}{TH_{Now} \times \text{e}^{\text{e}} \times 10^{8}}. \quad (82)$$

$$\text{þ} = \frac{D^{Now}{}_{Light-V} \times X_{C-Earth,Now}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times VOTR^{Now}{}_{\text{Distance}\ \ Light \rightsquigarrow 1\ year}}. \quad (83)$$

$$\text{þ} = \frac{2.028627807733590978178434736786 1 \times X_{C-Earth,Now}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times 1.014313903866795489089217368393 1 \times 10^{-3}}. \quad (84)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right) \times X_{C-Eart\ h,Now}}{\text{Distance}\ \ ^{Now}{}_{Light \rightsquigarrow 1\ year} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right) \times 10^{-3}}. \quad (85)$$

$$\text{þ} = \frac{1.999999999999999999999999999999 \times X_{C-Earth,Now}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times 10^{-3}}. \quad (86)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right) \times X_{C-Eart\ h,Now}}{\text{Distance}\ \ ^{Now}{}_{Light \rightsquigarrow 1\ year} \times 10^{-3}}. \quad (87)$$

$$\text{þ} = \frac{D^{Now}{}_{Light-V} \times \text{g}_{0-\text{Now}}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times VOTR^{Now}{}_{\text{Distance}\ \ Light \rightsquigarrow 1\ year} \times \text{e}^{\text{e}}}. \quad (88)$$

$$\text{þ} = \frac{2.028627807733590978178434736786 1 \times \text{g}_{0-\text{Now}}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times 1.014313903866795489089217368393 1 \times 10^{-3} \times \text{e}^{\text{e}}}. \quad (89)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right) \times \text{g}_{0-\text{Now}}}{\text{Distanc e}^{Now}{}_{Light \rightsquigarrow 1\ year} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right) \times 10^{-3} \times \text{e}^{\text{e}}}. \quad (90)$$

$$\text{þ} = \frac{1.999999999999999999999999999999 \times \text{g}_{0-\text{Now}}}{\text{Distance}^{Now}{}_{Light \rightsquigarrow 1\ year} \times 10^{-3} \times \text{e}^{\text{e}}}. \quad (91)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right)\times \text{g}_{0-\text{Now}}}{\text{Distance}^{\ Now}{}_{Light\sim 1\ year}\times 10^{-3}\times \text{e}^{\text{e}}}. \quad (92)$$

$$\text{þ} = \frac{VVR^{Now}{}_{X_{C-Earth}} \times X_{C-Earth,Now}}{\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times \text{PGCOTR}} = \frac{2.028627807733590978178434736 7861\ \times \text{g}_{0-\text{Now}}}{\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times 10^{10}\times \text{e}^{\text{e}}}. \quad (93)$$

$$\text{þ} = \frac{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)\times \text{g}_{0-\text{Now}}}{[(e^{X_{C-Earth,Now}})-1]\times 10^{10}\times \text{e}^{\text{e}}}. \quad (94)$$

$$\text{þ} = \frac{X_{C-Earth,Now}}{AOE_{Exact}} = \frac{\text{g}_{0-\text{Now}}}{AOE_{Exact}\ \times \text{e}^{\text{e}}}. \quad (95)$$

In above equations $\text{g}_{0-\text{Now}}$ is the present value of standard gravity and equal to: 10.195000354006777301014825930477 m/s^2.

Old values of strength limit of earth and standard gravity according to above equations is obtained by:

$$\text{g}_{0-\text{Old}} = \frac{\text{þ}\times TH_{Old}\times \text{e}^{\text{e}}\times VTR^{Old}{}_{th}}{TH^{Old}{}_{V}} = \frac{\text{þ}\times TH_{Old}\times \text{e}^{\text{e}}\times 10^{8}}{2}. \quad (96)$$

$$\text{g}_{0-\text{Old}} = \frac{\text{þ}\times \text{Distance}^{\ Old}{}_{Light\sim 1\ year}\times VOTR^{Old}{}_{\text{Distance}\ Light\sim 1\ year}\ \times \text{e}^{\text{e}}}{D^{Old}{}_{Light-V}}. \quad (97)$$

$$\text{g}_{0-\text{Old}} = \frac{\text{þ}\times \text{Distance}^{\ Old}{}_{Light\sim 1\ year}\times 10^{-3}\times \text{e}^{\text{e}}}{2}. \quad (98)$$

$$\text{g}_{0-\text{Old}} = \frac{\text{þ}\times[(e^{X_{C-Earth,Old}})-1]\times 10^{10}\times \text{e}^{\text{e}}}{2}. \quad (99)$$

$$\text{g}_{0-\text{Old}} = \text{þ}\times AOE_{Old}\ \times \text{e}^{\text{e}}. \quad (100)$$

$$X_{C-Earth,Old} = \frac{\text{þ}\times TH_{Old}\times VTR^{Old}{}_{th}}{TH^{Old}{}_{V}} = \frac{\text{þ}\times TH_{Old}\times 10^{8}}{2}. \quad (101)$$

$$X_{C-Earth,Old} = \frac{\text{þ}\times \text{Distance}^{\ Old}{}_{Light\sim 1\ year}\times VOTR^{Old}{}_{\text{Distance}\ Light\sim 1\ year}}{D^{Old}{}_{Light-V}} = \frac{\text{þ}\times \text{Distance}^{\ Old}{}_{Light\sim 1\ year}\times 10^{-3}}{2}. \quad (102)$$

$$X_{C-Earth,Old} = \ln\left(\frac{VVR^{Old}{}_{X_{C-Earth}}\times \text{g}_{0-\text{Old}}}{\text{þ}\times e^{e}\times \text{PGCOTR}} + 1\right). \quad (103)$$

Then, Present values of strength limit of earth and standard gravity according to above equations is calculated by:

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times 1.014313903866795489089217368393 1\ \times 10^{8}}{2.028627807733590978178434736 7861}. \quad (104)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times\left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right)\times 10^{8}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \quad (105)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times 10^{8}}{1.999999999999999999999999999999 9}. \quad (106)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times TH_{Now}\times \text{e}^{\text{e}}\times 10^{8}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.254994597433953509261572114332 66}\right)}. \quad (107)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times \text{Distance}^{\ Now}{}_{Light\sim 1\ year}\times VOTR^{Now}{}_{\text{Distance}\ Light\sim 1\ year}\ \times \text{e}^{\text{e}}}{D^{Now}{}_{Light-V}}. \quad (108)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times \text{Distance}^{\ Now}{}_{Light\sim 1\ year}\times 1.014313903866795489089217368393 1\ \times 10^{-3}\times \text{e}^{\text{e}}}{2.028627807733590978178434736 7861}. \quad (109)$$

$$\text{g}_{0-\text{Now}} = \frac{\text{þ}\times \text{Distance}^{\ Now}{}_{Light\sim 1\ year}\times\left(\left[\frac{1}{\text{A.D}}\right]^{0.005228459757807961981946511942 69}\right)\times 10^{-3}\times \text{e}^{\text{e}}}{\left(\left[\frac{1}{\text{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \quad (110)$$

$$g_{0-\mathrm{Now}} = \frac{\text{þ}\times \mathrm{Distance}^{\ Now}{}_{Light\sim 1\ year} \times 10^{-3} \times e^{e}}{1.999999999999999999999999999999999}. \tag{111}$$

$$g_{0-\mathrm{Now}} = \frac{\text{þ}\times \mathrm{Distance}^{\ Now}{}_{Light\sim 1\ year} \times 10^{-3} \times e^{e}}{\left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.254994597433953509261572114332 66}\right)}. \tag{112}$$

$$g_{0-\mathrm{Now}} = \frac{\text{þ}\times\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times 10^{10}\times e^{e}}{2.028627807733590978178434736 7861}. \tag{113}$$

$$g_{0-\mathrm{Now}} = \frac{\text{þ}\times\left[\left(e^{X_{C-Earth,Now}}\right)-1\right]\times 10^{10}\times e^{e}}{\left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \tag{114}$$

$$g_{0-\mathrm{Now}} = \text{þ} \times AOE_{Exact} \times e^{e}. \tag{115}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times TH_{Now} \times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{\text{þ}\times TH_{Now} \times 1.014313903866795489089217368393 1 \times 10^{8}}{2.028627807733590978178434736 7861}. \tag{116}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times TH_{Now} \times \left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.005228459757807961981946511942 69}\right)\times 10^{8}}{\left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \tag{117}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times TH_{Now} \times VTR^{Now}{}_{th}}{TH^{Now}{}_{V}} = \frac{\text{þ}\times TH_{Now} \times 10^{8}}{1.999999999999999999999999999999999}. \tag{118}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times TH_{Now} \times 10^{8}}{\left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.254994597433953509261572114332 66}\right)}. \tag{119}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times \mathrm{Distance}^{\ Now}{}_{Light\sim 1\ year} \times VOTR^{Now}{}_{\mathrm{Distance}\ Light\sim 1\ year}}{D^{Now}{}_{Light-V}} \tag{120}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times \mathrm{Distance}^{\ Now}{}_{Light\sim 1\ year} \times 1.014313903866795489089217368393 1 \times 10^{-3}}{2.028627807733590978178434736 7861}. \tag{121}$$

$$X_{C-Earth,Now} = \frac{\text{þ}\times \mathrm{Distance}^{\ Now}{}_{Light\sim 1\ year} \times \left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.005228459757807961981946511942 69}\right)\times 10^{-3}}{\left(\left[\frac{1}{\mathrm{A.D}}\right]^{0.260223057191761471243518626275 35}\right)}. \tag{122}$$

$$X_{C-Earth,Now} = \ln\left(\frac{VVR^{Now}{}_{X_{C-Earth}} \times g_{0-\mathrm{Now}}}{\text{þ}\times e^{e}\times \mathrm{PGCOTR}} + 1\right). \tag{123}$$

5. Calendar Adjusting According to Old Standard Gravity

Scientific parameters adjoin to each other in the existence world. Light components properties like distance that light travel in one year and its changes can use to adjust different scientific theories and subjects and annual calendar such as number of day's determination. Also this will use to comprehend astronomical changes. According to number of days in a year can adjust some formulas in this article and also can reach to precise scientific values.

Variations occurrence time range of distance that light travel in one year according to present standard gravity based on 9858880926.1883561954017773864286 year occurrence time range of principle great structural changes and a defined variations rate of 1.999999999999999999999999999999999 Km ≈ 2 Km ($VOTR^{Now}{}_{\mathrm{Distance}\ Light\sim 1\ year}$) is equal to variations occurrence time range of distance that light travel in one year according to old standard gravity $\left(VOTR^{Old}{}_{\mathrm{Distance}\ Light\sim 1\ year}\right)$.

Number of days in a year calculates by below relations:

$$VOTR^{Old}{}_{\mathrm{Distance}\ Light\sim 1\ year} = VOTR^{Now}{}_{\mathrm{Distance}\ Light\sim 1\ year} = 10^{-3} \tag{124}$$

$$Nodioy = \left(\sqrt{\frac{1}{\left(\mathrm{VOTR}^{\mathrm{Old}}{}_{\mathrm{Distance\ Light}\ \sim 1\ \mathrm{year}}\right)_{\mathrm{in\ year}}}} \times 10^{\mathrm{ECC}}\right)_{\mathrm{in\ second\ and\ convert\ to\ day}}. \tag{125}$$

$$Nodioy = \left(\sqrt{\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \times 10^{6}} \right)_{\text{in second and convert to day}} . \quad (125\text{-}1)$$

$$Nodioy = \left(\sqrt{\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \times \left[\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \right]^{VDVR^{Old}{}_{X_{C-Eart\ h}}} \right)_{\text{in second}} . \quad (126)$$

$$Nodioy = \left(\sqrt{\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \times \left[\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \right]^{2} \right)_{\text{in second}} . \quad (127)$$

$$Number\ of\ days\ in\ one\ year = Nudiyear = \frac{\left(\sqrt{\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \right) \times 10^{6}}{60 \times 60 \times 24} \quad (128)$$

where, Nodioy or Nudi year or Nd is number of days in one year, $VOTR^{Now}{}_{\text{Distance } Light\sim 1\ year}$ is Variations occurrence time range of distance that light travel in one year according to present standard gravity based on 9858880926.1883561954017773864286 year occurrence time range of principle great structural changes and a defined variations rate of 1.999999999999999999999999999999 Km ≈ 2 Km and equal to 10^{-3} year, $VOTR^{Old}{}_{\text{Distance } Light\sim 1\ year}$ is Variations occurrence time range of distance that light travel in one year according to old standard gravity and equal to 10^{-3} year (occurrence time range of distance variations during light travel in one year or distance variations during light travel in one year occur in 10^{-3} year), $VDVR^{Old}{}_{X_{C-Eart\ h}}$ is Variations distance value range of earth's strength limit in 10 billion year according to old standard gravity and equal to 2 Km.

ECC is the number of earth's creation cycles (number of cycles in earth creation) and equal to 6 cycles.

One of the most important applications of variations factors (like variations occurrence time range of distance that light travel in one year according to old standard gravity and strength limit of earth's variations distance value range in 10 billion year) is uncovering the creation cycles of earth and therewith demonstrating the number of creation cycles of earth. ECC is measured by below relations:

$$10^{\text{ECC}} = \left[\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \right]^{VDVR^{Old}{}_{X_{C-Eart\ h}}} \quad (129)$$

$$\text{ECC} = \log\left(\left[\frac{1}{\left(\text{VOTR}^{\text{Old}}{}_{\text{Distance Light}\sim 1\text{ year}}\right)_{\text{in year}}} \right]^{VDVR^{Old}{}_{X_{C-Eart\ h}}} \right) \quad (130)$$

Number of days in one year equal to 366.00435881578464490727934542045 day or that's equal to 366 day and 6 min and 16.60168379331998893544432688 seconds or equal to 366 day and 376.60168379331998893544432688 seconds.

Variations occurrence time range of distance that light travel in one year based on old standard gravity from Equation (31) and Equation (32) is obtain by:

$$VOTR^{Old}{}_{\text{Distance } Light\sim 1\ year} = \frac{AOE_{Old} \times D^{Old}{}_{Light-V}}{\text{Distance}^{\ Old}{}_{Light\sim 1\ year}} . \quad (131)$$

$$VOTR^{Old}{}_{\text{Distance } Light\sim 1\ year} = \frac{AOE_{Old} \times \left(\left[\frac{1}{\text{A.D}} \right]^{0.254994597433953509261572114332 68} \right)}{\text{Distance}^{\ Old}{}_{Light\sim 1\ year}} . \quad (132)$$

Then follow relations derived according to Equation (126), Equation (128), Equation (131) and Equation (132):

$$Nudioy = \frac{\left(\sqrt{\frac{1}{\left(\frac{AOE\ Old \times D^{Old}{}_{Light-V}}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}}\right) \times \left[\frac{1}{\left(\text{VOTR}^{\ \text{Old}}{}_{\text{Distance Light}\ \backsim 1\ \text{year}}\right)_{\text{in year}}}\right]^{VDVR^{\ Old}{}_{X_{C-Eart\ h}}}}{60\times 60\times 24}. \quad (133)$$

$$Number\ of\ days\ in\ one\ year = \frac{(\sqrt{\frac{1}{\left(\frac{AOE\ Old \times D^{Old}{}_{Light-V}}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}})\times 10^6}{60\times 60\times 24}. \quad (134)$$

$$\text{Nudiyear} = \frac{\left(\sqrt{\frac{1}{\left(\frac{\text{AOE Old} \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right)}{\text{Distance}^{\ \text{Old}}{}_{\text{Light}\ \backsim 1\ \text{year}}}\right)_{\text{in year}}}}\right) \times \left[\frac{1}{\left(\text{VOTR}^{\ \text{Old}}{}_{\text{Distance Light}\ \backsim 1\ \text{year}}\right)_{\text{in year}}}\right]^{\text{VDVR}^{\ \text{Old}}{}_{\text{X}_{\text{C-Earth}}}}}{60\times 60\times 24}. \quad (135)$$

$$Nudiyear = \frac{\left(\sqrt{\frac{1}{\left(\frac{AOE\ Old \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right)}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}}\right)\times 10^6}{60\times 60\times 24}. \quad (136)$$

$$Nd = \left(\sqrt{\frac{1}{\left(\frac{AOE\ Old \times D^{Old}{}_{Light-V}}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}} \times \left[\frac{1}{\left(\frac{AOE\ Old \times D^{Old}{}_{Light-V}}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}\right]^{VDVR^{\ Old}{}_{X_{C-Eart\ h}}}\right)_{\text{in second}} \quad (137)$$

$$Nd = (\text{U} \times \text{R})_{\text{Convert to second}} = (\text{U} \times \text{R})_{\text{in second}}. \quad (138)$$

$$\text{U} = \sqrt{\frac{1}{\left(\frac{AOE\ Old \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right)}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}} \quad (138\text{-}1)$$

$$R = \left[\frac{1}{\left(\frac{AOE\ Old \times \left(\left[\frac{1}{\text{A.D}}\right]^{0.25499459743395350926157211433268}\right)}{\text{Distance}^{\ Old}{}_{Light\backsim 1\ year}}\right)_{\text{in year}}}\right]^{VDVR^{\ Old}{}_{X_{C-Eart\ h}}} \quad (138\text{-}2)$$

Old age of the earth, area density, variations rate of distance that light travel in 0.001 year (according to old standard gravity) and distance that light travel in one year (according to old standard gravity) are determinant factors in calculation of variations occurrence time range of distance that light travel in one year (according to old standard gravity) based on Equation (131) and Equation (132).

6. Gravitational Particle's Life Time or Main Recycling Time

Life time of various particles like gravitational particles can define by knowing of variations ranges ($VOTR^{Old}{}_{\text{Distance}\ Light\backsim 1\ year}$ and $VDVR^{Old}{}_{X_{C-Eart\ h}}$). Gravitational particle recycling time is an internal recyc-lingtime.

6.1. Gravitational Particle's Life Time Computation by Variations Ranges

Life time of gravitational particles is given by follow relations:

$$LTGP = ([VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}}]_{convert\ \ to\ hour})_{in\ hour} \times \left(10^{VDVR^{Old}{}_{X_{C-Earth}}}\right)_{in\ \frac{Sec}{hour}} \quad (139)$$

$$LTGP = (VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}})_{in\ hour} \times 10^2 in\ \frac{Sec}{hour} = 878.4\ \text{sec} \quad (140)$$

LTGP = life time of gravitational particles in seconds = 14.64 min = 0.244 hour.

Variations occurrence time range according to old standard gravity by life time of gravitational particles is obtained by:

$$(VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}})_{in\ hour} = \frac{LTGP}{\left(10^{VDVR^{Old}{}_{X_{C-Earth}}}\right)_{in\ \frac{Sec}{hour}}} \quad (141)$$

$$\left(10^{VDVR^{Old}{}_{X_{C-Earth}}}\right)_{in\ \frac{Sec}{hour}} = \frac{LTGP}{(VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}})_{in\ hour}} \quad (142)$$

Variations distance value range according to old standard gravity by life time of gravitational particles and variations occurrence time range is as follows:

$$\left(VDVR^{Old}{}_{X_{C-Earth}}\right)_{in\ \frac{Sec}{hour}} = Log\left[\frac{LTGP}{\left(VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}}\right)_{in\ hour}}\right] \quad (143)$$

where, LTGP is life time of gravitational particles, $VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}}$ is Variations occurrence time range of distance that light travel in one year according to old standard gravity and equal to 8.784 hour (distance variations during light travel in one year occur in 10^{-3} year), $VDVR^{Old}{}_{X_{C-Earth}}$ is Variations distance value range of earth's strength limit in 10 billion year according to old standard gravity and equal to 2 Km.

6.2. Computation of Exact Life Time of Gravitational Particles by Unit of Time

Gravitational particles life time has important role in age of the universe determination. Unit of time calculated from multiplication of sequence of converting units in life time of gravitational particles. In fact unit of time is equal to 10 percent of number of seconds in one year. Unit of time and life time of gravitational particles defined by below equations:

$$UOT = ([VOTR^{Old}{}_{\text{Distance }_{Light\sim 1\ year}}]_{convert\ \ to\ hour})_{in\ hour} \times \left(10^{VDVR^{Old}{}_{X_{C-Earth}}}\right)_{in\ \frac{Sec}{hour}} \times 60^2 \quad (144)$$

$$UOT = (\text{LTGP})_{in\ seconds} \times 60^2 \quad (145)$$

$$(\text{LTGP})_{in\ seconds} = \frac{UOT}{60^2} \quad (146)$$

$$\text{UOT} = \text{Unit Of Time} = 3162240\ seconds = \frac{1}{10} \times number\ of\ seconds\ in\ one\ year \quad (147)$$

$$\text{UOT} = 10\%\ \text{of}\ number\ of\ seconds\ in\ one\ year = \frac{1}{10} number\ of\ seconds\ in\ 366\ days \quad (148)$$

$$Number\ of\ Seconds\ in\ one\ Year = \text{unit of time} \times 10 = 3162240\ \text{s} \quad (149)$$

$$(\text{LTGP})_{in\ seconds} \times 60^2 = \frac{1}{10}\text{Nosioney} = \text{Unit of Time} = 3162240\ \text{second} \quad (150)$$

$$(\text{LTGP})_{in\ seconds} = \frac{\frac{1}{10}\text{Nosioney}}{60^2} = \frac{\text{Unit of Time}}{60^2} = \frac{3162240\ \text{second}}{60^2} \quad (151)$$

$$(\text{LTGP})_{in\ seconds} \times (CUMS) \times (CUHM) = \text{UOT} = \frac{1}{10} number\ of\ seconds\ in\ 366\ days \quad (152)$$

$$(\text{LTGP})_{in\ seconds} = \frac{\text{UOT}}{(CUMS)\times(CUHM)} = \frac{\frac{1}{10} number\ \ of\ seconds\ \ in\ 366\ days}{(CUMS)\times(CUHM)} \quad (153)$$

$$(\text{LTGP})_{in\ seconds} = \frac{10\%\ \text{of}\ number\ \ of\ seconds\ \ in\ 366\ days}{(CUMS)\times(CUHM\ )} \tag{154}$$

$$(\text{LTGP})_{in\ seconds} \times (\ CUHMMS)^{VDVR^{Old}{}_{X_{C-Eart\ h}}} = \text{UOT} \tag{155}$$

$$(\text{LTGP})_{in\ seconds} = \frac{\text{UOT}}{(CUHMMS\ )^{VDVR^{Old}{}_{X_{C-Eart\ h}}}} \tag{156}$$

where, LTGP is life time of gravitational particles, Nosioney is number of seconds in one year, CUMS is converting unit of minute to second, CUHM is converting unit of hour to minute, CUHMMS is converting unit of hour to minute and minute to second, $VOTR^{Old}{}_{\text{Distance}\ _{Light\sim 1\ year}}$ is Variations occurrence time range of distance that light travel in one year according to old standard gravity and equal to 8.784 hour, $VDVR^{Old}{}_{X_{C-Eart\ h}}$ is Variations distance value range of earth's strength limit in 10 billion year according to old standard gravity and equal to 2 Km.

Exact life time of gravitational particles (ELTGP) according to unit of time is:

ELTGP = Exact Life Time of Gravitational Particles = 878.4104611578831477747042900908 Sec ELTGP = 14.640174352631385796291173816818 Min.

7. How Long Neutrons Live; What Is the Exact Main Internal Recycling Time of Neutrons

Despite over decades of taking measurements, scientists cannot agree on how long neutrons live. Neutrons are stable inside atoms, but on their own they decay in about 15 minutes, more or less, into a few other particles. Exactly how much more or less is the sticking point. Each experiment seems to yield a different answer. To measure how long neutrons last before decaying, scientists look for either the disappearance of neutrons or the appearance of their decay products. Neutrons disappear through a process called neutron beta decay, transforming themselves into protons by emitting an electron (shedding a negative charge to become positively charged) and an antineutrino. One method of measuring how long neutrons last before decaying entails trapping a group of neutrons inside a physical bottle and counting how many remain after various lengths of time. Another, called the beam method, is to produce a tightly confined spray, or beam, of neutrons and surround it with a "proton trap" to count the protons created when neutrons decay [23].

Beam experiments have been going on for more than 30 years, with the leaders in the field located at NIST. Their best, latest beam results, published in 2013, measured the neutron lifetime at 887.7 seconds, plus or minus 3.1 seconds. Bottle experiments, in contrast, go back only about 15 years but have already posted results with higher precision than beam findings. The best result to date from a bottle experiment came in 2008 from collaboration between the Petersburg Nuclear Physics Institute and the Joint Institute for Nuclear Research in Russia, along with the Institut Max von Laue Paul Langevin (ILL) in France. That team measured the neutron lifetime at 878.5 seconds, plus or minus one second [23].

The lack of resolution, conflicting results and errors in measurements of how long neutrons live frustrating the understanding of the exact lifetime of neutron [Adopted from [23]].

Measurements of gravitational and neutral particles (like neutron) life time will open new comprehend deeper aspects of physics and help to recognizing unknown particles. Also solving this mystery can help to answer more fundamental key questions in sciences especially in physics**.** Furthermore, presented physical models which describe overall processes of universe have more infinite deficiencies. Measurements of gravitational and neutral particles life time leads to a new comprehend overall physical model(s) to describe the processes of universe.

Further above mentioned must ask this question; may gravitational particles take properties close to neutral particle like neutron's features? In fact exact life time of gravitational particles is main internal recycling time of neutral particles like neutron.

Main internal recycling time of neutron is equal to 878.4104611578831477747042900908 Sec = 14.640174352631385796291173816818 Min.

8. Discussion

Strength limit parameter can use to solve scientific problems especially in various fields of physics. Also many

essential and fundamental laws will derive, base, clarify and feature by this factor.

Range of Earth's accretion time according to various prediction models is from a few millions up to about 100 million years [Adapted from [24]]. Present exact age of the earth (AOE_{Exact}) in-fact is the age since the beginning time of the formation of the earth (incipient formation phase to exist). And old age of the earth (AOE_{Old}) is the age after initial complete formation of earth. Therefore the exact accretion time of Earth (which is not yet computed exactly) according to old and present exact age of the earth is 180190186.3958982254670832584968 years (4730365236.2904 minus 4550175049.8945017745329167415032).

Age of the oldest known solid constituents within meteorites that are formed within the solar system is 4.567 billion years [25] [26]. Thus, complete formation and accretion time of the oldest known solid constituents within meteorites that are formed within the solar system according to present exact age of the earth is 163365236.2904 years (4730365236.2904 minus 4567000000). The exact initial complete formation time of Earth after complete formation and accretion of the oldest known solid constituents within meteorites that are formed within the solar system is 16824950.1054982254670832584968 years.

Above mentioned proved that the time or the age (age of the earth) since earth's initial complete formation (old age of the earth) is 4550175049.8945017745329167415032 years.

The resulting knowledge from criticized adopted radiometric timescale were improved methods of dating, which incorporated advances in mass spectrometry, sampling and laser heating, has led to the current understanding that the earth is 4.55 billion years old [27].

Discovered parameters in mentioned articles can response to many scientific puzzles such as: What is the time (The age of the earth) since formation of the earth's metallic core? What is the time since formation of the earliest solid crust? What is the age of the solar system? What is age of the earth-moon system? and etc.

In universe all actions happening alike with all chemical and physical changes that occur within a cell and inside of all parts of body. Human body's biological, chemical, physical and metabolism structures are completely similar to earth and universe identically. Therefore all things in universe have some sign and allegory in human, nature and earth. Also existence is a set of universe(s) and everything in it (or is a set of existed, visible or invisible) and all of the existence parts such as universe like earth have unity, correlation, continuity and dependency together. As regards that every number has vast philosophy behind their mask and world interpretable by sciences of numbers. Thereupon can use of these specialties to discover sciences and solving the scientific problems.

A current estimation of human total cell number calculated for a variety of organs and cell types correspond to a total number of $3.72*10^{13}$. This presented cell count could be a starting point for a common effort to complete the total calculation [28]. Variations time range of thickness of homo sphere according to old standard gravity ($VTR^{Old}{}_{th}$) approximately is equal to 372000^{th} of the total number of cells in human's body.

Principle great structural changes occurrence time range (PGCOTR or PGSCOTR) is equal to 1/372000 of total number of molecules in all cells of human's body. If metabolism structures of human's body, numbers, features and genetical properties of cells, molecules, atoms and nucleus of atoms and other parts changes and egress from natural status then great changes occurs (like mutations or various diseases…) in body.

As same as human's body when structure of the universe like specifications and number of galaxies, systems, planets, stars and others undergo changes with un-natural changes of earth's ecosystems by pernicious manipulation actions of humans then these leads to principle great structural changes. On the other words, universe having natural principle great structural changes during their life time like humans body which have natural essential structural changes during their life.

According to Equation (1), Equation (19) and Equation (24) to Equation (123) we can comprehend that universe has expanding and earth has twitching and also sides of earth have reducing now and diameter, radius, volume of earth and earth density will decrease during time passing. Thus thickness of homo sphere, distance that light travel in one year, standard gravity and strength limit of earth will increase in every instant of time with increasing age of the earth. Strength variations coefficient with regard to overall age of the earth is constant in 10^{10} year time range (principle great changes occurrence time range). Also may be change with substantial occurrences in universe and its variations needs to an extended deep perusal work.

Standard gravity value will vary by changing strength limit of earth and distance that light travel in one year and other features of earth and universe. Then, strength limit and other features of earth are constant instantly and some parts of this paper particular strength limit and age of the earth determined based on calculated old standard gravity that obtained in 16^{th} century. Therefore new standard gravity, strength limit, age of the earth

and other features must be defined and adjusting according to present time.

In below computations one year is equal to 365.256363004 days [29] and sidereal rotation period is 0.99726968 day or 23 hour 56 minute 4.1 second therefore one day is equal to 23.999999901954526705576993198291 hour [30].

Old Age of the Earth = 4,550,175,049.8945017745329167415032 Year

Exact present Age of the Earth in 2013 = 4.7303652362904 Billion Year

Exact present Age of the Earth = 17277960018879.885767603616 Days

Exact present Age of the Earth = 413538854128546.768130104091496 Hour

Exact present Age of the Earth = 24812331247712806.08780624548976 Min

Exact present Age of the Earth = 1488739874862768365.2683747293856 Seconds

Old Strength Limit Number of Earth = 0.647121571722434191724104493196 61 MPa

Present Strength Limit Number of Earth = 0.67274804880317322552081489426818 MPa

Old Standard Gravity = 9.80664999999999999999999999999 m/s^2

Present Standard Gravity in 2013 = 10.195000354006777301014825930477 m/s^2

Strength limit parameter can help to finding relational standard patterns between numbers in existence (in the entire world or universe).

The supercontinent Pangea was split into Laurasia and Gondwana in the middle Jurassic between 157 to 178 million years ago (Mya) which one of the three alternative models that candidates to explain the historical bio-geography of the Asian notopterids. Scientific evidence suggests that Madagascar originated from a severe earthquake that separated it from Africa about 200 million years ago [31] [32].

These cases, the exact accretion time of earth (180190186.39589822546708325849 68years) and results in this article showed and approved that value of old standard gravity (g_{0-Old}) belongs to 180190186.3958982254670832584968 years ago and 180.19018639589822546708325849 68 million years of earth's accretion. In this status can response to many questions such as: When does old standard gravity change? Is it constant in a span until now? And what are the exact intellectual operational scientific witnesses of Newton in gravity discovery in 16^{th} century for this value? Old value of distance that light travel in one year defined based on speed of light equal to 299792458 m/s. According to new value of distance that light travels in one year and its proportionality to age of the earth, Will speed of light change? Also does strength variations coefficient change after 10 billion year? Those questions and others will proceed and scrutinize in separate papers.

9. Conclusions

Sciences are infinite sets of questions. Answer of questions is infinitude sets of sciences wherefores. Therefore can be cognize all aspects of sciences with deep look at all of the universe components and their peculiarities.

The age of the Earth according to the previous studies is 4.54 billion years (4.54×10^9 years ± 1% = 4.4946×10^9 years ~ 4.5854×10^9 years) [2] [33] [34]. This age is based on evidence from radiometric age dating of meteorite material and is consistent with the ages of the oldest-known terrestrial and lunar samples. Following the scientific revolution and the development of radiometric age dating, measurements of lead in uranium-rich minerals showed that some were in excess of a billion years old [35]. The oldest such minerals analyzed to date small crystals of zircon from the Jack Hills of Western Australia are at least 4.404 billion years old [36]-[38]. Comparing the mass and luminosity of the Sun to the multitudes of other stars, it appears that the solar system cannot be much older than those rocks. Ca-Al-rich inclusions (inclusions rich in calcium and aluminium), the oldest known solid constituents within meteorites that are formed within the solar system are 4.567 billion years old [25] [26] giving an age for the solar system [24].

Moreover different ideas this is not an upper limit for the age of Earth because the constitutive components of solar system were exist before forming it.

It is hypothesized that the accretion of Earth began soon after the formation of the Ca-Al-rich inclusions and the meteorites. Because the exact accretion time of Earth is not yet known, and the predictions from different accretion models range from a few millions up to about 100 million years, the exact age of Earth is difficult to determine. It is also difficult to determine the exact age of the oldest rocks on Earth, exposed at the surface, as they are aggregates of minerals of possibly different ages [24].

In this condition needs to use a substantial parameter like strength limit from earth and universe that related to beginning and creation of this planet and macrocosm (world) with high impact in every science which also don't

need and involve to making assumptions to computing and prove directly age of the earth.

Strength limit of earth parameter has the most phenomenal applications in discovering of relations between all sciences and all components of universes or in other words, strength limit factor (in every science) will be used to discover solutions for different challengeable and complicated cases in more fields of sciences such as: geology, physics, mathematics, astronomy, astrophysics, cosmology, black holes, structural biology and etc.

Strength limit factor of earth is a principal vital factor that is the cohesion between different materials, particles and elements in earth. This parameter is the strength limit of earth's constitutive components (visible or invisible components) and the stability limit of earth and all constitutive particles and elements of earth. This Actual Multi Interaction Strength created and defined from interactions of many factors involves existence of universe and earth and includes more factors and parameters also related to various factors such as earth gravitational acceleration, standard gravity, earth density, volume of earth and use of this parameter in fundamental works increases accuracy of related projects and determinant calculations like age of the earth computations.

Strength limit of earth is an interaction parameter from sets of existent forces in all the worlds and gravity is a sign of existent absorption balance energy among forces, elements, energies and situations. Age of the earth with its strength limit and gravity are related together. Determining Earth's strength limit and calculating accurate age of the earth based on this factor and gravity can help to organize and also adjust and complete more theories and response to different questions in various fields of sciences.

Gravitation's exponential impact coefficient is the equivalency density of gravitation in steady stable state of universe. Also age of the earth will determine with measuring of surface density and gravitational impact coefficient in every instant of time that is obtained from earth's strength limit. Roles of strength limit number of earth, gravity force, Napier's constant, thickness of homosphere and distance that light travel in one year in age of the earth computation illustrate that exact age of the earth (the exact overall age of the earth) is 4.7303652362904 billion years and also demonstrate the complicate interdependency of all scientific parameters in universe. Strength limit of earth express that the exact accretion time of earth is 180.190186395898225467083258496 8 million years. Furthermore, earth's strength limit variations distance value ranges in 10 billion year and occurrence time range of distance variations during light travel in one year proves that earth is created in 6 cycles.

The time of complete formation and accretion of the oldest known solid constituents within meteorites that are formed within the solar system according to present exact age of the earth is 163.3652362904 million years. The exact initial complete formation time of Earth since complete formation and accretion of the oldest known solid constituents within meteorites that are formed within the solar system is 16.824950105498225467083258496 8 million years.

Earth's strength limit can be used to adjust different scientific subjects. Number of days in one year according to old standard gravity is equal to 366 day and 6 min and 16.601683793319988935444326 88 seconds. Also main internal recycling time of neutron and exact life time of gravitational particles according to unit of time are equal to 878.410461157883147777470429009 08 Sec or 14.640174352631385796291173816818 Min.

Gravity has imperceptible changes during time according to old and present values of standard gravity. These computable changes can help to realize mysteries of existence macrocosm.

Strength limit of earth is a solution to find extended numerical and mathematical connections of all earth's components (even universe's components) logically. Strength limit shows the complicate cross and interdependency connexions of different sciences in existence. Many fundamental laws sit on strength limit parameter in which this factor can be base and feature by them. And also strength limit factor exist on many fundamental laws that can expatiate them. Strength limit parameter illustrates how numeral and information calculations are able to change, modify, improve and correct scientific laws. Complicate correlations of various sciences can prove theoretical measures in scientific community.

Earth's strength limit number seems simple but a new complicate parameter can help for response to interdisciplinary substantial scientific key questions and problems. Some of the most important questions which are discovered factor open new doors to solve the mare: How did the Universe Begin? And How Is the Unity and Dependency of Existence's Components like the Unification of the Fundamental Forces? What are the Other Performer and Mummer Fundamental Forces? Moreover, this factor is ultimate to know universe's mysteries and developing ultra-advanced technologies which are important bases work today.

Scrutinizer and deep look at strength limit that's a simple and complicate parameter and its relations with other knowledge will lead to making, inventing and developing of various sciences particular different fields of physics such as general and modern physics.

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High Lights

- Strength Limit sciential factor open new horizons to realizing scientific and numeric complex connections of various components of the entire world.
- Strength Limit presents a rigorous mathematical approach to solve science's problems.
- S.L.E proves the present exact age of the earth from this planet's features is 4.7303652362904 billion years.
- Earth Strength Limit's distance variations range in 10 billion year and occurrence time range of distance variations during light travel in one year demonstrates that earth created in 6 cycles.
- Gravity is changing in lifetime of earth according to Earth's Strength Limit.
- E.S.L shows how numerical and information computations can correct science's laws.
- Strength limit of earth affirm the exact accretion time of Earth is 180190186.3958982254670832584968 year.
- Exact life time of gravitational particles and main internal recycling time of neutron are equal to 878.4104611578831477**7747042900908** Sec.

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