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# **Gravity and Solar System Evolution**

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## Abstract

In this work, we attempt to construct some novel solutions of a gravity mystery with Six types of theories for Gravitation namely: Newton's Theory of a Gravitation, Einstein's Theory of the Gravitation, Dark Matter and Dark Energy Theory, Braneworld Gravity, Quantum Gravity, and the Cosmic Fabric Gravitation Theory. The Cosmic Fabric consists of a dark fabric, and bright fabric as all objects where contained at the structure of a Solar System. For this purpose, we use some mathematical equations, and MATLAB Program to draw the optimum shape of a gravitation as a dark fabric distortion in three dimensions. In the investigation, showing the discrepancies between the solutions for Gravitational theories which obtained in the past time, and the new solutions of a gravity obtained using different methods in present time. Furthermore, Cosmic Fabric Gravity where dramatically draws the Geometry of a Gravitation in three dimentions to a better understanding of the characteristics of a Gravitation in the present research work. It is the new theory of a gravitation in the 21 century. The Gravity is acting directly on the Formation, Structure, combination, and Evolution of a Solar System. Solar System is the gravitationally bound system where Dark Fabric steeply warped, and strongly vibrated in the center under the stress of the Sun, and all Planets, Asteroids, Comets, Natural Satellites, Meteors, dust particles, gaseous molecules, atoms orbit it uniformly.

Keywords: Gravitational Theories; Cosmic Fabric Gravitation; Solar System Evolution.

# 1. Introduction

Recently, Gravitational Theories have gained growing attention, and in general it is a hot topic in the field of a natural science, and cosmology. Gravity is a Space Pillars. Space is not absolute vacuum as we guess it, because it is filled with other matter such as Dark Fabric Matter that named Dark Matter and Energy in present time, and in the past called space time fabric according General theory of relativity is the Einstein's theory of Gravity at that moment. The density and potential energy of a dark matter is not so great as Atoms to make solid objects. Dark Matter Particles are interacting together like crystal lattice to make a Dark Fabric Structure in Three Dimensions. Dark Fabric consists of dark particles like subatomic particles where available inside the structure of an ordinary matter, and Energy.

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Dark particles are interacting together in one dimension to build dark strings, dark strings combined together in two dimensions to establish dark web, and dark web interacting together in all directions to build cosmic dark fabric in three dimensions.

Cosmic dark fabric is a space's soft fabric, it has the ability to stretch and contract under the effect of stress and energy when exposed to the pressure of an ordinary matter and energy like the Stars, Planets, Satellites, Asteroids, Meteors, Neutron Stars, and Black Holes. The cosmic dark Fabric actively curved, and oscillated under the effect of the Sun and planets in the Solar System. Continuous curvatures and ripples that occurred in the structure of a dark fabric built a solar system disc of gravity, and bounded Solar System together more than 4.5 billion years. Furthermore, Curvatures in the dark fabric of the Universe will make orbitals for Planets, Comets, and Asteroids to orbit successfully around the Sun. The Cosmic dark fabric can be warped strongly under the effect of Giant objects like the Sun. The Sun becomes the center of gravity for total solar system objects, because the Sun contains about 99.85% of the total mass of a solar System. Without Cosmic Dark Fabric Curvatures, the Solar System will get ripped into vacuum, and relations between Sun and planets will finalize. Dark Fabric is the interaction bridge for Solar System and all Universe. The Solar System's evolution will stop forever without space fabric that named Dark Fabric in 21 century. In this work the concept of gravity will be modified forever. Gravity effects can be imaginative in three dimensions. The Solar System Disc of Gravity as Cosmic Dark Fabric Curvatures with Planets Rotations around the Sun imagined before in several gravitational theories. Internal planets orbit the Sun with high speeds as compared to external planets. Mercury is an internal planet of a Solar System orbits the Sun with a very high speed as compared to the speed of other planets in the Solar System, because the Mercury Planet is a very close planet to the Sun's border, in the region much closed to the Sun the Dark Fabric Warped strongly, the Gravitational Waves are very strong in the border of Massive objects, Spacetime Fabric that named a dark fabric actively accelerated at very high speed in the border of massive objects like the Sun as compared to the slight mass of planets when dark fabric warped slightly under their effects, Dark energy and gravitational waves are very strong around the border of massive objects, especially in the border of a Sun that may accelerate Mercury to high speed and change its orbital eccentricity, The orbital eccentricity (or eccentricity) is a measure of how much an elliptical orbit is 'squashed'. the Tangential velocity of internal planets is very high in the border of the Sun as compared to the speed of external planets according to conservation law of angular momentum, the Cosmic Dark fabric warped strongly in the region of Internal planets as Mercury, Venus, Earth and Mars as compared to external planets such as Jupiter, Saturn, Uranus, Neptune and Pluto where dark fabric flat and warped slightly under the pressure of a Sun in far distances. Dark fabric warped and vibrated steeply under the pressure of a Sun in the region of internal planets, for this reason dark fabric disc is much curved in the internal planet region. Furthermore, dark fabric curved and vibrated slightly under the effect of a Sun in the region of external planets, in this region Solar System disc is flat more in far distances of the Sun. In the region where space Fabric steeply curved all objects are moving quickly as compared to the speed of objects in flat regions.

In crystallography, crystal structure is a description of the ordered arrangement of atoms, ions or molecules in a crystalline material.[1] Ordered structures occur from the intrinsic nature of the constituent particles to form symmetric patterns that repeat along the principal directions of three-dimensional space in matter. Dark matter and Dark Energy theory is a hypothetical form of matter and energy thought to account for approximately 95%

of the total matter and energy in the whole Universe. Its presence is implied in a variety of astrophysical observations, including gravitational effects that cannot be explained by accepted theories of gravity unless more matter is present than can be seen. Dark matter particles interact together like crystal lattice to form dark fabric structure in three dimensions.

# 2. Solar System

The Solar System is the gravitationally bound system of the Sun and the objects that orbit it. The Solar System bounded together under the effect of a Gravitation. The gravitation is curvatures and vibrations were occurred in the structure of a Dark Fabric. The curvatures represent the attraction force between objects in the Solar System, and all objects in the Visible Universe, otherwise the vibrations and waves in a dark fabric structure represent the repulsion forces. The dynamical balance between attraction, and repulsion forces was saved the Solar System. The curvatures in dark fabric led to attract, and bound Solar System, and all Visible Universe. In another hand, the vibrations and waves in the dark fabric gravity, the Solar System will rip and spread into space. We suggest that the implemented approach is effective and efficient than other approaches, and the solutions gained in this paper will help to explain Gravitation solutions geometrically, and mathematically. Space filled with a dark fabric matter acting directly on the ordinary matter.

Our solar system consists of our local star the Sun, and everything bound to it by gravity such as the Internal Planets the Mercury, Venus, Earth, Mars, and External Planets like the Jupiter, Saturn, Uranus, and Neptune; dwarf planets such as Pluto; dozens of moons; and millions of asteroids, comets, and meteoroids. Approximately 4.5 billion years ago, gravity pulled a cloud of dust and gas together to form our solar system. A massive concentration of interstellar gas and dust created a molecular cloud that would form the sun's birthplace. The four smaller inner system planets, Mercury, Venus, Earth and Mars, are terrestrial planets, being primarily composed of rock and metals. The Solar System also contains smaller objects like Asteroids. The Asteroid belt, which located between the orbits of Mars and Jupiter, mostly contains objects composed, like the terrestrial planets, of rock and metal. The asteroid Ceres at least close to being a dwarf planet. Pluto is one an external planet of a Solar System [2]. Pluto was discovered in 1930 as the result of a search motivated by Percival Lowell's prediction of a 9th planet. The external Gaseous Planets are in the border of the Solar System. The two largest planets, Jupiter and Saturn, are gas giants, being composed mainly of hydrogen and helium; the two outermost planets, Uranus and Neptune, are ice giants, being composed mostly of substances with relatively high melting points compared with hydrogen and helium, called volatiles, such as water, ammonia and methane. All Nine Planets have almost Elliptical orbits that lie within a nearly flat disc called the ecliptic. In addition to these regions, various other small-body populations, including comets, centaurs and interplanetary dust clouds, freely travel between regions.

The Sun is a Star, and consists of a Hot Plasma. The surface of the Sun is unstable because of a coronal mass ejection. At a distance of more than a few solar radii from the Sun, the solar wind reaches speeds of (250 km/s - 750 km/s) and is supersonic, meaning it moves faster than the speed of the fast magnetoionic wave. The solar wind, a stream of charged particles flowing outwards from the Sun, creates a bubble-like region in the

interstellar medium known as the heliosphere. The heliopause is the point at which pressure from the solar wind is equal to the opposing pressure of the interstellar medium; it extends out to the edge of the scattered disc. Comets are small Solar System bodies, typically only a few kilometers across, composed largely of volatile ices. The Oort cloud, which is thought to be the source for long-period comets, may also exist at a distance roughly a thousand times further than the heliosphere. The Sun is an average Star, it is located in the center of a Solar System. The Solar System is located 26,000 light-years from the center of the Milky Way galaxy in the Orion Arm, which contains most of the visible stars in the night sky. Light travels at an incredible speed are 186,000 miles per second (300,000 km/sec) [3]. That's very fast a photon particle. If you could travel at the speed of light, you would be able to circle the Earth's equator about 7.5 times in just one second. The distance between Stars, and Sun is so big, needed to light year to measure it. The nearest stars are within the so-called Local Bubble, Alpha Centauri A & B are roughly 4.35 light years away from us. Proxima Centauri is slightly closer at 4.25 light years. A light year is the distance light travels in one year, it is equal to  $9.461 \times 10^{12}$  km. Astronomers can go on to determine the mass of the other planets of the solar system relative to that of Earth [4]. One way is by comparing the effect of a planet on its satellite with that of the Earth on the Moon. The time in which a small satellite completes its orbit about its planet depends on two things only: the satellite's distance from the planet's center and the intensity of the planet's gravitational field. The Sun is a stellar system, and Earth is a Planetary System.

#### 3. Newton's Theory of Gravitation

Gravity (from Latin gravitas means 'weight'). Gravity is the attracting force between two or more objects during the space between them. The weight of objects referred to the effect of gravitational forces that appeared between them. Gravitation, is a natural phenomenon by which all things with mass or energy including Atoms, Molecules, Planets, Satellites, Stars, Solar System, Stellar Clusters, Galaxies, Galaxies Clusters, and even light are attracted to (or gravitate toward) one another during space among them [5]. On the Earth, gravity gives weight to physical objects, Objects attracted and accelerated by Earth's Gravity. The Sun and Moon's gravity cause the tides of the Seas and oceans. The Universe will rip without the Gravity. The gravitational attraction of the original gaseous matter present in the Universe caused it to begin coalescing and forming stars, and caused the stars, Planets, Stellar Clusters to group together into galaxies, the Universe tightened together by gravity, so gravity is responsible for combination of many large-scale structures in the Universe. Gravity existed everywhere, and has an infinite range, although its effects become weaker as objects get further away.

The Classical theory of Gravity improved in past. In 1679, Robert Hooke wrote to English mathematician Isaac Newton of his hypothesis concerning orbital motion, which partly depends on an inverse square force of gravity. The Theory of gravity mathematically enhanced during Newton's era. In 1684, both Hooke and Newton told Edmond Halley that they had proven mathematically the inverse square law of planetary motion. Unfortunately, Hooke refused to produce his proofs, but Newton developed his theory and produced on the motion of bodies in an orbit, in which he derives Kepler's laws of planetary motion. Halley supported Newton's expansion of his work into the Mathematical Principles of Natural Philosophy, in which he hypothesizes the inverse square law of universal gravitation, even today Newton's theory of gravity is an important factor in the classical Physics. According to Newton's Law of gravity, the force is proportional to the product of the two masses, and inversely

proportional to the square of the distance between them. Newton has a famous equation in the gravity as shown as below, for two bodies having masses m and M with a distance r between their centers of mass, the equation for Newton's Universal Law of Gravitation is:

$$F_{g} = G \frac{M.m}{r^{2}}$$
(1)

where  $F_g$  is the magnitude of the gravitational force and G is a proportionality factor called the gravitational constant, it is a Universal gravitational constant; it is thought to be the same everywhere in the Universe. The gravitational constant (also known as the universal gravitational constant, the Newtonian constant of gravitation, or the Cavendish gravitational constant), when considering masses in kilograms and distance r in meters. It has been measured experimentally to be:

$$G = 6.674 x \ 10^{-11} \frac{N \cdot m^2}{Kg^2}$$

Gravity near the surface of the earth is  $F_g$ . [6] The weight of an object is the gravitational force  $F_g$  between it and Earth as below:

$$\mathbf{F}_{\mathbf{g}} = mg \tag{2}$$

Substitute Equation (1) into Equation (2):

$$mg = G \frac{M \cdot m}{r^2}$$

and find the solutions of Eqs. (1) and (2), yet we get:

$$g = G \frac{M}{r^2}$$
(3)

Theoretically and experimentally, we Know the value of a Gravitational constant G, the mass of Earth M and radius of Earth r, in laboratory and theory we can find the value of a gravitational acceleration g of a falling body with mass m on the Earth is:  $g = 9.81 m/s^2$  The value of acceleration g on the surface of objects with different masses is changeable. The objects have great accelerations on the surface of stars and planets with high masses. The objects have minimum accelerations g on the surface of Natural Satellites, and planets with low masses. Aching feet, a falling apple and other fruits from trees, Solar System formation, stellar and Galaxy clusters, Bonding Atmosphere on the Earth's surface, and the orbit t of the Moon around the Earth, each are caused by the gravitational force.

## 4. Balance Between Centrifugal Force and Gravitational Force

The force needed by a body of mass **m**, to keep in a circular motion at a distance **r**, from the center of a circle with velocity v, is the Centrifugal force  $\mathbf{F}_c$ , as written as below:

$$F_c = \frac{mv^2}{r} \tag{4}$$

$$v = r\omega \tag{5}$$

Substitute Equation (5) into Equation (4):

$$F_c = \frac{m(r\omega)^2}{r}$$

and find the solution, yet we get:

$$F_c = mr\omega^2 \tag{6}$$

Where the magnitude of centrifugal force  $\mathbf{F}_c$  on an object of mass  $\mathbf{m}$  at the distance  $\mathbf{r}$  from the origin of a frame of reference rotating with angular velocity  $\boldsymbol{\omega}$ . Centrifuge, any device that applies a sustained centrifugal force that is a force due to rotation. Effectively, the centrifuge substitutes a similar, stronger, force for that of gravity. It is a familiar observation that an object revolving in a circle exerts a force away from the center of rotation. This force, which is the outward pull of the ball on its string is the centrifugal force. An object needs the called centripetal force keep in a circular motion is the centrifugal force. to Mars with mass m in the distance r rotating around the Sun with Elliptical orbit according to balancing between Gravitational force  $F_g$  in equation (1) and Centrifugal Force in Equation (6):

$$F_c = F_g, \qquad mr\omega^2 = G \frac{m \times M}{r^2}, \qquad r\omega^2 = G \frac{M}{r^2},$$
$$r^3 \omega^2 = GM, \qquad \omega^2 = \frac{GM}{r^3},$$

yet we get angular velocity:

$$\omega = \sqrt{\frac{GM}{r^3}} \tag{7}$$

Theoretically, we know the mass of Sun M and Distance Between Sun and Mars r as below by using equation (7) above we get the value of angular velocity  $\omega$  as shown as here:

$$\omega = \sqrt{\frac{6.673 \times 10^{-11} \frac{N.m^2}{kg^2} \times 1.99 \times 10^{30} kg}{(2.28 \times 10^{11} m)^3}}$$
$$\omega = \sqrt{\frac{1.120 \times 10^{-14} \frac{rad^2}{s^2}}{s^2}} = 1.058 \times 10^{-7} rad/s$$

In physics, angular velocity or rotational velocity, also known as angular frequency vector is a vector measure of rotation rate, that refers to how fast an object rotates or revolves relative to another point, i.e., how fast the angular position or orientation of an object changes with time. In general, angular velocity has dimension of angle  $\theta$  per unit time t.

There are two types of angular velocity. First the Orbital Angular Velocity refers to how fast a point object revolves about a fixed origin, i.e., the time rate of change of its angular position relative to the origin. Second type is Spin Angular Velocity refers to how fast a rigid body rotates with respect to its center of rotation and is independent of the choice of origin, in contrast to orbital angular velocity.

Angular velocity  $\omega$  can be calculated by following equation as written as below:

$$\omega = \frac{\Delta \theta}{\Delta t} , \qquad (8)$$

Mars is the fourth planet from the Sun and the second smallest planet in the group of internal planets of a Solar System. In English, Mars carries the name of the Roman god of war and is often referred to as the Red Planet. Mars orbits the Sun once in 687 Earth days, which means that its year is nearly twice as long as Earth's year, the Earth's year is 365 days. Mathematically Mars's year can be calculated by using above equation (8):

$$\omega = \frac{\Delta\theta}{\Delta t}, \quad \Delta t = \frac{\Delta\theta}{\omega} = \frac{1 \text{ revolution } x \ 2\pi \text{ rad}}{1.058 \ x \ 10^{-7} \ rad/s} = 5.9357 \ x \ 10^7 \ s$$
$$\Delta t = \frac{5.9357 \ x \ 10^7 \ s}{60 \frac{s}{min} \ x \ 60 \frac{\min}{h} \ x \frac{24 \ h}{days}} = \frac{5.9357 \ x \ 10^7}{\frac{86400}{days}} = 687 \ days$$

Where  $\omega$  is angular velocity that calculated before,  $\Delta \theta$  is angular displacement of Mars rotating around the Sun in one period per a year, Angular displacement is measured in units of radians,

and  $\Delta t$  is time period of Mars's rotation around the Sun per year is 687 days.

Substitute equation (7) into equation (5) yield to find tangential velocity which named the orbital velocity is:

$$v = \sqrt{\frac{GM}{r}} , \qquad (9)$$

Orbital velocity (v) is the velocity at which a body revolves around the other body. Objects that travel in the uniform circular motion around the Earth are called to be in orbit. The velocity of this orbit depends on the distance between the object and the center of the earth. Furthermore, orbital velocity is the velocity of an object that orbits around the center of mass to keep its dynamical balance at whole. An object with a tiny mass is m orbits the around center of other massive object is M to keep its dynamical balance continuously.

An orbital velocity is the velocity sufficient to cause Planets, and a natural or artificial satellites to remain in

their orbits. The term can be used to refer to either the mean orbital speed, the average speed over an entire orbit, or its instantaneous speed at a particular point in its orbit. Also, the orbital velocity v can be calculated by following equation:

$$v = \frac{2\pi r}{T},\tag{10}$$

Where v is the orbital velocity, r is the orbital radius, T is the orbital period. By using eqs.(9) and (10) the orbital velocity v of Mars around the Sun is 24.1 km/s. In other hand, the orbital velocity of the Earth is 29.8 km/s. [7] So, when one of the masses is almost negligible compared to the other mass, as the case for Earth and Sun, one can approximate the orbit velocity v. In Newtonian mechanics, the centrifugal force is an inertial force that appears to act on all objects when viewed in a rotating frame of reference. It is directed away from an axis which is parallel to the axis of rotation and passing through the coordinate system's origin. If the axis of rotation passes through the coordinate system's origin, the centrifugal force is directed radially outwards from that axis.

The concept of centrifugal force can be applied in rotating devices, such as centrifuges, centrifugal pumps, centrifugal governors, and centrifugal clutches, and in centrifugal railways, planetary orbits and banked curves, Solar System Rotation, Galaxy disc rotation, vehicle rotation in the round roads needed to centrifugal force, accretion disc around massive bodies and black holes, regular and irregular circular rotations, bicycle wheel rotations all are nice examples for centrifugal forces, when they are analyzed in a rotating coordinate system.

#### 5. Einstien's Theory of Gravitation

After Newton's theory of gravitation in classical Physics, Einstien come to exist to develop the theory of gravitation in modern Physics. Einstien developed the General Theory of relativity to describe the Gravity as spacetime fabric curvatures. Most Scientists think the General relativity, also known as the general theory of relativity, is the geometric theory of gravitation published by Albert Einstein in 1915 and is the current best description of gravitation in modern physics. Einstein's general theory of relativity explains gravity as a distortion of space (or more precisely, spacetime fabric curvatures) caused by the presence of matter or energy. Massive objects like black holes, and Neotron Stars, generate large gravitational field by warping strongly the geometry of the surrounding spacetime fabric. The curvature of spacetime is directly related to the energy and momentum of whatever matter and radiation are present. Spacetime fabric is warped strongly under the effect of massive objects like Black holes, and warped slightly by the low mass objects like Stars, Planets, and natural satellits.

General relativity has best concept to some phenomenas in our era, the era of Technology and space revolution. In some cases, general relativity differs significantly from those of classical Newton's physics, especially concerning the passage of time, Stress and energy, the geometry of space, the motion of bodies in free fall, the motion of planets around Stars, and the propagation of light. Examples of such differences include spacetime fabric curvatures, gravitational time dilation, gravitational lensing, gravitational waves, the gravitational redshift of light, the gravitational time delay and singularities of black holes. The predictions of general relativity in relation to classical and modern physics have been confirmed in all observations and experiments to date. The

orbit of Mercury is shifting very gradually over time due to the curvature of space-time around the massive Sun, according to NASA and ESA space agencies.

Einstein's theory has important astrophysical implications. For example, it implies the existence of black holes regions of space in which space and time are distorted strongly in such a way that nothing, not even light, can escape as a remnant of an end state for massive stars. The black hole is a remnant core of supermassive star after its death and explosion like supernova.

Einstein could describe the gravity as the Spacetime Curvatures. In his description to gravity, he could write a famous equation deals the space time curvature that called the Einstein Field Equation (EFE). The Einstein field equations (EFE); also known as Einstein's equations) is one of many equations in Albert Einstein's general theory of relativity that describe the fundamental interaction of gravitation as a result of space-time being curved by the pressure of mass and energy. From Einstein's predictions, the gravitational waves were described by Einstein more than 100 years ago. Einstein predicted that violent events, such as the collision of two black holes, or two Neutron Stars create ripples in space-time fabric known as gravitational waves. It was published by Einstein in 1915 as a tensor equation, the EFE relate local space and time curvature (expressed by the Einstein tensor) with the local energy and momentum within that spacetime (expressed by the stress and energy tensor). Einstein could write a well-known equation in general theory of relativity is the Einstein field equation (EFE), this equation could explain the gravitation in Einstein's era. General theory of relativity one of elegant theory of gravity.

The Einstein field equation (EFE) Mathematically may be written in the following form:

$$\Lambda g_{\mu\nu} + R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} = \frac{8\pi G}{C^4} T_{\mu\nu}$$
(11)

where  $R_{\mu\nu}$  is the Ricci curvature tensor, R is the scalar curvature,  $g_{\mu\nu}$  is the metric tensor,  $\Lambda$  is the cosmological constant, G is Newton's gravitational constant, c is the speed of light in vacuum, and  $T_{\mu\nu}$  is the stress - energy tensor. The EFE is a tensor equation relating a set of symmetric  $4 \times 4$  tensors, Each tensor has 10 independent components. Gravity as spacetime fabric curvatures, and Wormholes as time travel bridge were described by General Theory of relativity. General Theory of relativity is the best theory for describing the Universe in many decades. Hubble concluded that the Universe is expanding, as written as above clearly in equation (11) Einstein done a mistake in his theory when he added a cosmological constant  $\Lambda$  in General Relativity to keep the Universe static. General Relativity is a useful, beautiful, elegant, and powerful theory that changed our conception of the Universe. [8] Singularity theorems prove that, given a number of plausible assumptions, general relativity commits suicide inside black holes. The conclusion that there are places, called singularities, inside black holes where the general relativistic description of spacetime fails is profound. It means that new physics, presumably quantum gravity in some form, must replace general relativity at singularities. Any viable theory of quantum gravity must be able to resolve the problem of singularities. [9] Gravitational Field Equations and Theory of Dark Matter and Dark Energy is the main objective of this article to derive a new set of gravitational field equations and to establish a new unified theory for dark energy and dark matter.[10] Dark matter and dark energy phenomena are two important phenomena, which requires a more fundamental

examination of the law of gravity. In (Ma and Wang, 2014b), a new set of gravitational field equations are derived based only on 1) the Einstein principle of general relativity, and 2) the principle of interaction dynamics, due to the presence of dark energy and dark matter. With the field equations, we show that gravity can display both attractive and repulsive behavior, and the dark matter and dark energy are just a property of gravity caused by the nonlinear interactions of the gravitational potential  $g_{\mu\nu}$  and its dual field.

## 6. Dark Matter and Dark Energy

Most experts think that dark matter is abundant in the universe and that it has a strong influence on structure and evolution of the Universe, and Solar System. Dark matter is called dark because it does not appear to interact with the electromagnetic field, which means it directly does not absorb, reflect or emit electromagnetic radiations, and is therefore difficult to detect. The total mass and energy of the Universe contains 5% ordinary matter and energy, 23% dark matter, and 72% of a form of energy known as dark energy. In another hand, ordinary matter and energy are visible dimensions of the Universe that called visible Universe. Visible Universe consists of ordinary matter and energy like Atoms, Particles, and Radiations. Visible Universe detectable by naked eyes and instruments. Visible Universe is the compacted world that began to exist during big bang history, and continuous with expanding until today. Dark Energy leads to a repulsive force, which tends to accelerate the expansion of the Visible Universe. Otherwise, Dark Matter leads to an attraction force which tends to decelerate the expansion of the Visible Universe. The balance and stability of the Visible Universe continuous because of hydrodynamic equilibrium between Dark Energy that leads to rip Visible Universe, and Dark Matter which leads to contract Visible Universe. Dark matter slows down the expansion of the universe, while dark energy speeds up it.

Dark Matter and Dark Energy has an ancient history. Scientists believed the existence of Dark matter and energy in the space. It has an influence on the evolution of a Visible Universe. The hypothesis of dark matter has an elaborate history, when the dark matter problem can be traced back to at least the 1930s, but it was not until the early 1970s that the issue of 'missing matter' was widely recognized as problematic.[11] In a talk given in 1884, Lord Kelvin estimated the number of dark bodies in the Milky Way from the observed velocity dispersion of the stars orbiting around the center of the galaxy. By using these measurements, he estimated the mass of the galaxy, which he determined is different from the mass of visible stars. Lord Kelvin thus concluded many of our Stars, may be dark bodies [12]. In 1906 Henri Poincare in "The Milky Way and Theory of Gases" used "dark matter", in discussing Kelvin's work.[13]The first to suggest the existence of dark matter using stellar velocities was Dutch astronomer Jacobus Kapteyn in 1922 [14,15]. Fellow Dutchman and radio astronomy pioneer Jan Oort also hypothesized the existence of dark matter in 1932 [16]. Oort was studying stellar motions in the local galactic neighborhood and found the mass in the galactic plane must be greater than what was observed, but this measurement was later determined to be erroneous [17]. In 1933, Swiss astrophysicist Fritz Zwicky, who studied galaxy clusters while working at the California Institute of Technology, made a similar inference [18,19]. Zwicky applied the virial theorem to the Coma Cluster and obtained evidence of unseen mass he called dark matter [20]. This book covers the particle physics and cosmological aspects of dark matter and dynamical dark energy, including a discussion of how modified theories of gravity could provide a possible candidate for dark energy. A detailed presentation is also given of the possible ways of testing the theory in terms of cosmic microwave background, galaxy redshift surveys and weak gravitational lensing observations. Further indications the mass to light ratio was not unity came from measurements of galaxy rotation curves. In 1939, Horace W. Babcock reported the rotation curve for the Andromeda nebula (known now as the Andromeda Galaxy), which suggested the mass to luminosity ratio increases radially [21]. He attributed it to either light absorption within the galaxy or modified dynamics in the outer portions of the spiral and not to the missing matter he had uncovered.

#### 7. Braneworld Gravity

Brane model based on Randall-Sundrum scenarios with a generic dark energy component. Much work has been devoted to the phenomenology and cosmology of the so called Braneworld Universe, where our (3+1)dimensional universe lies on a brane surrounded by a (4+1)-dimensional bulk spacetime that is essentially empty except for a negative cosmological constant and the various modes associated with gravity. Solar System surrounded by Braneworld gravity. Furthermore, Solar System is bubble inside a Braneworld. The latter drives the accelerated expansion at late times of the Universe. In string theory and related theories such as supergravity theories, a brane is a physical object that generalizes the notion of a point particle to higher dimensions [22]. As a so-called "Theory of Everything" candidate, string theory aims to address various theoretical conundrums; the most fundamental of which is how gravity works for tiny objects like electrons and photons. Branes are dynamical objects which can propagate through spacetime according to the rules of quantum mechanics. They have mass and can have other attributes such as charge. According to Brane-worlds and M theory the String theory thus incorporates the possibility that the fundamental scale is much less than the Planck scale felt in 4 dimensions. There are five distinct 1+9-dimensional superstring theories, all giving quantum theories of gravity. Discoveries in the mid-1990s of duality transformations that relate these superstring theories and the 1+10dimensional supergravity theory, led to the conjecture that all of these theories arise as different limits of a single theory, which has come to be known as M theory. The eleven dimensions in M theory is related to the string coupling strength; the size of this dimension grows as the coupling becomes strong. At very low energies, M theory can be approximated by 1+10-dimensional supergravity.

Mathematically, branes can be represented within categories, and are studied in pure mathematics for insight into homological mirror symmetry and noncommutative geometry [23]. While Einstein had said the phenomenon of gravity is really a manifestation of geometry, string theorists boldly proclaimed that the physics of our universe is a consequence of the geometry of Calabi-Yau space [24]. The observable Universe could be a 1+3-surface (the "brane") embedded in a 1+3+d-dimensional spacetime (the "bulk"), with Standard Model particles and fields trapped on the brane while gravity is free to access the bulk. Motivated by the problem of the evolution of bulk gravitational waves in Randall-Sundrum cosmology, we develop a characteristic numerical scheme to solve 1+1 dimensional wave equations in the presence of a moving time like boundary. In 1999, physicists Lisa Randall and Raman Sundry introduced a Braneworld theory that received considerable attention. Under their theory, there can be other universes just a microscopic distance away from ours. But this distance "is measured in some fourth spatial dimension of which we are not aware," explains Lisa Randall in her blog post explaining the ideas. Essentially, the visible universe is embedded in a larger Universe.

#### 8. Quantum Gravity

Quantum gravity (QG) is a field of theoretical physics that seeks to describe gravity in a much tiny world according to the principles of quantum mechanics, and where quantum effects cannot be ignored, [25] such as in the vicinity of black holes or similar compact astrophysical objects, and where the effects of gravity are so strong, such as neutron stars. Gravity is the attraction between two objects that have mass or energy, whether this is seen in dropping a rock from a bridge, a planet orbiting a star or the moon causing ocean tides, and Electron orbits the nucleus of an Atom. About four forces of Nature are acting directly on the Universe evolution, structure and controlling it entirely. These forces are Electromagnetic Force, Weak Nuclear Force, Strong Nuclear Force, and Gravity, also these forces govern everything that happens in the Universe. Three of the four fundamental forces of physics are described within the framework of quantum mechanics and quantum field theory. The current understanding of the fourth force, gravity, is based on Albert Einstein's general theory of relativity, which is formulated within the entirely different framework of classical physics. However, that description is incomplete and describing the gravitational field of a black hole in the general theory of relativity leads physical quantities, such as the spacetime curvature, to diverge at the center of the black hole. This signals the breakdown of the general theory of relativity and the need for a theory that goes beyond general relativity into the quantum world. At distances very close to the center of the black hole (closer than the Planck length), quantum fluctuations of spacetime are expected to play an important role [26]. To describe these quantum effects a theory of quantum gravity is needed.

Loop quantum gravity (LQG) is a new theory of quantum gravity, which aims to merge quantum both of mechanics and general relativity, incorporating matter of the Standard Model into the framework established for the pure quantum gravity case. It is an attempt to develop a quantum theory of gravity based directly on Einstein's geometric formulation rather than the treatment of gravity as a force. As a theory LQG postulates that the structure of space and time is composed of finite loops woven into an extremely fine fabric or network. These networks of loops are called spin networks. The evolution of a spin network, or spin foam, has an incredibly tiny scale on the order of a Planck length dimension, approximately  $1.6 \times 10^{-35}$  meters, and smaller scales are meaningless. Planck length is about  $10^{-20}$  times the diameter of a Proton. Unfortunately, the Quantum Gravity is working only in a microscopic world, it is not enough to describe all interactions and balances which occurred between visible Universe and dark fabric. It is the limited theory of a gravity, it is working only in the Quantum world, we need to more professional theory to describe the whole things and interactions between them from photons to a visible Universe.

In physics, the Planck length, denoted  $l_p$ , is a unit of length in the system of Planck units that was originally proposed by physicist Max Planck, following the equation of a Planck Length:

$$l_p = \sqrt{\frac{\hbar G}{c^3}} \tag{12}$$

Where  $\hbar$  = reduced Planck Constant,

G = Gravitational Constant,

C= speed of light in the vacuum,

 $l_p$  = Planck Length, it is about 1.6 x 10<sup>-35</sup> m.

Today, we need to bring the modern theory of a gravity is a Cosmic Fabric Gravity to describe the whole balances and interactions between celestial objects of the Visible Universe, Solar System, Galaxies, Atomic Structures, ordinary matter and energy, dark matter and dark energy, quantum gravity at whole. In the next steps of hard working, we come to explain the new best theory of a gravity is the Cosmic Fabric Gravity, it is the general theory of a gravity that working in the tiny and microscopic world as atomic structures, and dark fabric structures to the giant and large world as the structure of a whole Universe.

#### 9. Cosmic Fabric Gravity

Cosmic Fabric Gravity is the general theory of a gravity that describes the tiny and great interactions when occurred between the whole structures of the Visible Universe, Atoms, Photons, and Dark Fabric in the shape of curvatures, waves, ripples, zigzags, and distortions to transfer Energy among them, and to save general balance at the whole Universe. At the moment, it is the best theory of a gravity at the whole history of mankind, it is only the theory of a gravity that combined among all theories of gravity when scientists worked with them. In the past, most people worked hard to build the perfect theory for gravity they aim to describe all interactions between quantum world and Universe world, unfortunately they couldn't find the Unification Theory for gravity at their epoch. We have only this new theory of gravity could solve this mysterious at whole is the Theory of Cosmic Fabric Gravity. It is only theory that build the bridge between Cosmic Dark Fabric and Cosmic Bright Fabric, as we know the Universe contains dark fabric and bright fabric. In fact, when interaction between dark matter particles occurred the Dark Fabric Gravity takes place among them, this is only happening when dark fabric curved, waved, and distorted to transfer energy through dark fabric structures. The attraction and repulsion forces between dark matter particles lead to make Dark Fabric Gravity in microscopic and giant world, dark fabric is the best conductor between whole objects of the visible Universe to transfer energy, and to save the general balance of the Universe. Without dark fabric gravity the visible Universe will lose all its balance and connections. Dark fabric is the great preserver and conductor for Visible Universe from Photon and subatomic particles to Galaxy clusters, Supermassive Black Holes, and Galaxy Strings. The giant space between subatomic particles, and visible Universe filled with a Dark fabric matter. Both of visible fabric that name visible Universe, and dark fabric are working together to develop the structure and evolutions of a whole Universe. Without the general gravity of a cosmic fabric that name cosmic fabric gravity the Universe will rip forever. Fortunately, we have the cosmic fabric gravity to control the structure and evolution of Universe at whole. It is the great controller, and preserver for the life processes, and Universe Evolutions at whole.

Dark Fabric is a hidden dimension of a Universe beside bright fabric of a visible Universe. It was existed before the creation of our visible Universe, and Solar System. The Space is not vacuum totally, it is completed by dark fabric. The structure of a visible Universe, and ordinary matter bounded and preserved together by dark fabric gravity. It is the great preserver of the Visible Universe. Without the existence of the Dark Fabric the Universe will rip forever. It can affect on us and all shapes of objects where existing here in the Universe. It has the ability to attract your body, and push on you away too. Dark fabric has the combined structure. It has amazing Structure. Its structure built by Dark Matter Particles, when they interact together tightly in different dimensions. Dark matter Particles are small parts of a dark web. They contain dark matter and dark energy. Dark particles with Infinite numbers existed here in the vacuum of a Universe. Dark Particles are independent objects, they look like dark spheres in their shapes. They existed in space to form dark fabric structure, like subatomic particles as Protons, Electrons, and Neutrons were formed and built the structure of all Atoms. The structure of a dark fabric will build in three main steps. First step, when two or more Dark Matter Particles interact together in one dimension will build Dark Fabric Strings in one dimension. Second Step, when two or more dark strings combined together in two dimensions will build Dark Fabric Webs in two dimensions. Third Step, when two or more dark fabric webs tighten together in three dimensions will produce Dark Fabric in three dimensions. Dark Fabric is another building block of a space, and Visible Universe. All types of matter and energy influenced by Dark Fabric. Dark Fabric incredibly combined together and expanded into space in three dimensions. The dark fabric has an infinity length, and size. The direct interaction between visible Universe occurred by the existence of Dark Fabric that existed everywhere in the Space. Solar System structure and planetary system bounded together by the power of dark fabric gravity. Solar System like any other systems of the Visible Universe formed under the effect of a Cosmic Fabric Gravity. Cosmic Fabric Gravity is a new professional theory of a gravity. It will change and improve our conception of the Gravity. The direct interactions between bright and dark fabric of the Universe called Cosmic Fabric Gravity. It is the best solutions for the concept of a gravitation in our epoch. Without this new theory of a gravity, we can't understand the meaning of a gravity from quantum world to a Cosmic world. It is the best theory of a gravity at the whole history.

#### 10. Dynamical Balance Between Sun and Earth

The Sun is the star at the center of a Solar System [27]. It is a nearly perfect sphere of hot plasma, heated to incandescence by nuclear fusion reactions in its core, radiating the energy mainly as visible light, ultraviolet light, and infrared radiation. It is by far the most important source of energy for life on Earth. Its diameter is about 1.39 million kilometers (864,000 miles), or 109 times that of Earth. The Volume of the Sun so giant as compared to the Size of the Earth. More than 1.3 million Earth Planets can fit inside the Sun. Its mass is about 330,000 times that of Earth; it accounts for about 99.86% of the total mass of the Solar System. Roughly three quarters of the Sun's mass consists of hydrogen (~73%); the rest is mostly helium (~25%), with much smaller quantities of heavier elements, including oxygen, carbon, neon and iron. The mass of the Earth m is  $5.97 \times 10^{24} kg$ , it has very tiny mass as compared to the mass of the Sun M [28]. In fact, Solar System is unstatic System. It means that all Planets, Comets, and Asteroids in their continuous motions around the Sun which located in the center of a Solar System. The solar system is made up of the Sun, the planets, and their satellites, dwarf planets, many small objects, like asteroids, meteors, meteorites, and comets. All of these objects move and we can see these movements by naked eyes, and by using new technology of space. We notice the Sun rises in the eastern sky in the morning and sets in the western sky in the evening. We observe different stars and planets in the sky at different times of the year. The Mass of the Sun M is incredibly bigger than the mass of the earth **m**, for this reason the Earth orbits the Sun one time per year is 365 days. The Earth is unstatic planet in the Solar System. It has an orbit around itself. Another effect of Earth's rotation is that we have a cycle of daylight and darkness approximately every 24 hours. This is called a day. As Earth rotates, the side of Earth

facing the Sun experiences daylight, and the opposite side (facing away from the Sun) experiences darkness or nighttime. Since the Earth completes one rotation in about 24 hours, this is the time it takes to complete one day night cycle. The duration of day night cycle is not long as the year cycle. Earth's Seasons are four, like Summer, Autumnal, Winter, and Spring. It is a common misconception that summer is warm and winter is cold because the Sun is closer to Earth in the summer and farther away from it during the winter. Remember that seasons are caused by the 23.5-degree tilt of Earth's axis of rotation and Earth's yearly revolution around the Sun.

Cosmic Fabric Gravity has direct effects on the shape of Sun, and Planets. The Sun and Planets are spherical balls, because they are surrounded by dark fabric. Dark fabric has the ability to give pressure on them in all directions, this pressure of a dark fabric leads to form the prefect sphere of Sun and Planets. Bodies are in Free fall in the border of a Sun and planets because of a cosmic fabric gravity and its pressure. Especially high mass bodies with high potential energy more affected by a cosmic fabric gravity. The Sun is a perfect sphere inside a dark fabric matter [29]. The Astronomical Unit (AU), is a unit of length, roughly the distance from Earth to the Sun and equal to about 150 million kilometers (93 million miles) or ~8.3 light minutes. The gravity of a Sun is incredibly great. It can attract Earth's Planet in distance about 150 million kilometers. The Earth orbits the Sun in dynamical balance because of Forces balanced between gravitational force and centrifugal force that referred before in eqs. (1) and (4). From well known the mass of Earth m, orbital speed of Earth around the Sun  $\nu$ , Mass of Sun M, distance between Earth and Sun r, the gravitational force, or centrifugal force between Earth and Sun mathematically calculated, it is about  $3.67 \times 10^{22} Newtons$  [30]. When Newton's law of Gravity applied to the motion of planets around the sun, this theory explained all three of Kepler's empirically derived laws.

For best understanding cosmic fabric gravity, it needed to mathematical equations, and MATLAB program to draw its effect in two dimensions (x,y) or three dimensions (x,y,z). To reach this goal, it needs to write and explain following equations.

$$r = \sqrt{\frac{1}{z}}$$
(13)

Where r is the radius of a circle inversely proportional with z-axis, in Eq. (13). According to following conditions: If  $(z = \infty, r = 0)$ , If  $(z = 0, r = \infty)$ .

Normally, Eq. (13) is used to sketch the effect of massive objects on the Dark Fabric Structure in 3 Dimensions with axes (x,y,z). Especially it is used to show the dark fabric where steeply warped under the supergiant pressure of black holes and singularity. Singularity is a great regression region of black hole, because its density and gravity incredibly very high.

$$r = \sqrt{x^2 + y^2} \tag{14}$$

Where r is radius of a circle directly proportional with (x,y) axes in circle equation written above.

Put Eq. (13) into Eq. (14), yet we get:

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$$z = \frac{1}{x^2 + y^2}$$
(15)

Rewritten Eq. (15) as below:

$$z = \frac{1}{r^2} \tag{16}$$

Following the circle equations for the body that rotates with an angle  $\theta$  in a circular path around its center as shown as below:

$$r^2 = x^2 + y^2 \tag{17}$$

$$\mathbf{x} = rcos(\theta) \tag{18}$$

$$y = rsin(\theta) \tag{19}$$

Substitution Eqs. (18) and (19) into Eq. (17) leads to:

$$r^{2}(\sin\theta^{2} + \cos\theta^{2}) = r^{2}$$

$$\sin\theta^{2} + \cos\theta^{2} = 1$$
(20)

Where the radius of a circle (r = 1) in equation (20), then  $r^2 = 1$ .

Substitute Eq. (20) into Eq. (16), then we got:

$$z = \frac{1}{\sin\theta^2 + \cos\theta^2} \tag{21}$$

Furthermore, suppose Eqs. (15), and (21) could be written in following formula to draw the effect of an Earth's orbit around the Sun in a Dark Fabric Structure:

$$z = \frac{1}{\cosh(x^2 + y^2)} - \frac{\coth(x^2 + y^2)}{\tan(x^2 + y^2)}$$
(22)

By using MATLAB Program, and using Eq. (22) to draw the effect of an Earth's orbit in the dark fabric when Earth orbits the Sun in an elliptical path, suppose (-pi/2 < x < pi/2, -pi/2 < y < pi/2), or it can be written in following mathematical shape:  $-\frac{\pi}{2} < x < \frac{\pi}{2}, -\frac{\pi}{2} < y < \frac{\pi}{2}$ .

Below here the figure of an Earth where orbits the Sun in elliptical path, The Earth shown in a blue color, and the Sun in yellow color. The dark fabric steeply warped and waved under the effect of high mass, and pressure of the Sun that located in the center, and it was slightly warped and waved under the effect of our planet the Earth.



Cosmic Dark Web Warped Under The Pressure Of A Sun And The Earth

Figure1: Earth Orbits the Sun During Dynamical Balance in the Dark Fabric Curvatures.

From Figure (1) shown clearly, the Earth orbits the Sun in elliptical orbit because Dark Fabric warped very strongly under the pressure of a Sun, because the Sun has high mass and pressure. Furthermore, Dark Fabric little bit warped under the effect of Earth, because it has low mass and pressure. The mass of a Sun very high as compared to the Earth's mass. The Sun can make large distortion in the structure of a dark fabric, and the Earth can make only a tiny distortion in it. The gravitational field of the Sun is very large, otherwise the gravitational field of the Earth planet is very narrow. The Sun can capture and bound together all Solar System, and the Earth only can capture and control on the tiny objects, and our natural satellite the Moon which called Lunar. The Sun built Stellar System, and the Earth Built Planetary System. The Sun is the center of mass objects where rotate around it. The Sun is a main responsible on controlling all solar system together. Without an existence of a Massive Sun in the center of Solar System Disc, and dark fabric curvatures, the Solar System will rip into space forever. The Dark Fabric gravity is the hidden machine of all Solar System Family.

# 11. Solar System Evolution

Solar System is one of many billions Stellar Systems swimming inside the disc of our local Galaxy called the Milky Way Galaxy. For thousands of years, Astronomers, Religious Communities, and Astrologers believed that the Earth was at the center of our Universe, when they looked on the Sky they found the Sun, Moon, Comets, meteors, Satellites, Stars, and Planets are only as tiny objects were moving around our planet that named the Earth. Unfortunately, they couldn't understand the laws of gravity, and the laws of dark fabric curvatures that occurred differently under the effect of objects with high and low masses. It is a vision mistake, and misunderstanding Astrophysics at those moments. This perception was due in part to the fact that Earth based observations were complicated by the fact that the Earth is embedded in the Solar System. It was only after many centuries of continued observation, professional space Technology used, and accurate calculations that we discovered the Earth, and all other bodies in the Solar System where actually orbit the Sun. Especially, after Newton, Kepler, and Einstein's Equations well known, that it explained mathematically the Sun is at the

center of our Solar System, because the Sun contains more than 99.86% the total mass of our Solar System.

For starters, the Milky Way is really very big! Not only does it measure some 100,000 - 120,000 light years in diameter, and about 1,000 - 10000 light years thick, but up to 400 billion stars are located within it (though some estimates think there are even more). Solar System is only tiny object inside the disc of a Milky way. It can't be detected easily in other side of galaxy if looked by naked eyes or by technology which used in this moment. It is one of 400 billion stars where swimming inside the gravitational disc of our own Galaxy.

The nebular hypothesis says that the Solar System formed from the gravitational collapse of a fragment of a giant molecular cloud [31]. The various planets are thought to have formed from the Solar Nebula, the discshaped cloud of gas and dust left over from the Sun's formation [32]. The currently accepted method by which the planets formed is accretion, in which the planets began as dust grains in orbit around the central protostar. Figure (2) clearly shown the dark fabric curved and waved under the effect of a Sun, Planets, Asteroids, Comets, and Satellites. The dark fabric curved and oscillated steeply under the high pressure of a Sun because the Sun contains more than 99.85% the total mass of our solar system. The massive curvature of a dark fabric under the pressure of a Sun leads to attract and bound all Solar System together, for this reason all Planets, Asteroids, Comets, Satellites orbit around the Sun. Furthermore, dark fabric curved and waved slightly under the pressure of Solar Planets, Comets, Asteroids, Satellites, and Meteors, because of these tiny curvatures, and Waves, all Solar Planets, Comets, Asteroids, Meteors will orbit around the Sun. The Internal Planets of a Solar System orbit around the Sun with high speed, because the dark fabric was warped and oscillated strongly under the pressure of the Sun in a close border of a Sun, the massive curvatures and oscillations lead to attract, and repulse the internal planets strongly. In other hand, The External Planets of a Solar System orbit around the Sun with low speed, because the dark fabric was warped and oscillated slightly under the pressure of a Sun in an external border of a Solar System, the weak curvatures and oscillations lead to attract and repulse external planets slightly, for this reason external planets orbit the Sun with low speed as compared to an internal planet's speeds. According to a conservation law of angular momentum, the internal planets orbit the Sun with high speed as compared to an external planet's speeds. The dynamical balance between Sun, and all Planets, Asteroids, Satellites, Comets was kept the Solar System Family. The Massive curvatures of a dark fabric under the Sun's pressure, and the weak curvatures of its planets, asteroids, and satellites saved the solar system to many billion years.

Furthermore, suppose Eqs. (15), and (22) could be written in following formula to draw the orbit of all objects around the Sun as shown clearly in a Dark Fabric Distortions:

$$z = \frac{1}{\cos(x^2 + y^2)} - \frac{\coth(x^2 + y^2)}{\tan(x^2 + y^2)}$$
(23)

By using MATLAB Program, and using Eq. (23) to draw the effects of all objects in the dark fabric when orbit the Sun in elliptical paths, suppose (-pi/2 < x < pi/2, -pi/2 < y < pi/2), or it can be written in following mathematical shape:  $-\frac{\pi}{2} < x < \frac{\pi}{2}, -\frac{\pi}{2} < y < \frac{\pi}{2}$ .

Following the figure of all objects where orbit the Sun in elliptical paths inside a Solar System Disc, the

Asteroid belt located between internal and external planets. The dark fabric steeply warped and vibrated under the effect of high mass, and pressure of the Sun that located in the center, and it slightly warped and oscillated under the effect of solar objects where orbit it. The Cosmic Fabric Gravity is the best solution for the gravity of a Solar System disc. Solar system formed, and combined together strongly under the effect of a dark fabric distortions.



Cosmic Dark Fabric Curved and Waved under The Effect Of A Solar System

Figure 2: Dark Fabric Distortions and Solar System Evolution.

According to Eqs. (9) and (10) internal planets orbit the Sun with high velocity v and during short time periods T as compared to Orbital velocities and orbital periods of an external planets, as shown below here in a following Table 1.0 Planets' Orbital Distances, Speeds and Periods that orbit the Sun. Internal planets much closers to the Sun and orbit it in fast speed and during minimum time period. Otherwise, the external planets orbit the Sun with slow speed and during maximum years to complete one time period. Time period of a Mercury Planet is 88 days, and its orbital speed is very high about 48 km/s. Furthermore, the Time period of a Pluto planet is 248 years, and its orbital speed is very low about 4.7 km/s. According to conservation law of an angular momentum the orbital distances between Sun and Internal planets are very short that is why the orbital velocity and angular velocity of internal planets increased. According to conservation law of an angular momentum the orbital distances between Sun and external planets are so big, that is why the orbital velocity and angular velocity of external planets decreased inversely.

The orbital velocity of Planets may increase and decrease in the Solar System to save the general balance of a Solar System at whole. It is the gravity role to keep this accurate balance.

Planets	Distances From the Sun = r (Million km)	Orbital Speed = v ( km/s )	Orbital Periods = T ( Years )	
Mercury	57.9	48	0.24	
Venus	108.2	35	0.6	
Earth	149.6	29.8	1.0	
Mars	228	24.1	1.9	
Jupiter	778.6	13.1	12	
Saturn	1433.5	9.7	30	
Uranus	2872.5	6.8	84	
Neptune	4495.0	5.4	165	
Pluto	5900	4.7	248	

Table 1: Planets' Orbital Distances, Speeds and Periods that orbit the Sun.

According to Eqs. (7) and (9) the orbital velocities v and angular velocities  $\omega$  of Planets in Solar System increased and decreased inversely with distances r between planets and the Sun, normally the Mass of a Sun M and the gravitational constant G are two constant factors in Eqs. (7) and (9). Time periods T of internal planets very low, and Time periods of external planets very big according to Eq. (10) because the Time periods of planets inversely proportional to orbital velocity and angular velocity of the planets. The dark fabric distortion is very high in the region of internal planets as compared to external planets region where dark fabric distortion is very low and solar system disc at this region in flat shape. The region surrounding the Sun extremely curved, and objects orbit the Sun in high speed according to the conservation law of an angular momentum and Energy. Following Figure (3) is the figure of Planets orbit the Sun in different orbital distances from the Sun with different speeds. Internal planets orbit the Sun with High speeds as compared to speed of external Planets.



Figure 3: Planets Orbit the Sun in Different Orbital Distances with Different Speeds.

# 12. Conclusion

In a present paper, the effect of a Gravity on a Solar System Formation and Evolution explained by several theories. According to my understanding to the Gravity, the Cosmic Fabric Gravity is a best new theory for gravity in Astrophysics, and Cosmology. It is modern, useful, and elegant theory of gravity. It will change and increase our knowledge on the dynamical phenome were occurred in the Universe. Cosmic Dark Fabric acting directly on the Solar System Formation and Evolution. Curvatures, and waves were occurred in the structure of a dark fabric will keep the dynamical balance of a Solar System forever. Without the role of a dark fabric and the role of a Cosmic Fabric Gravity, the Solar System will rip into absolute vacuum. Curvatures in the Dark Fabric represent gravitational attraction Forces, in the other side the ripples, Waves, and Gravitational waves that occurred and propagated through the structure of a dark fabric represented the repulsion force, and centrifugal force. Attraction force leads to bound whole Solar System together, Repulsion Force tends to rip and accelerate Solar System. The Dynamical balance between attraction force, and repulsion force directly kept the stability of a Solar System. Finally, we could conclude that the Cosmic Fabric Gravity is acting directly on the stability of the Solar System, and its evolution. Cosmic Fabric Gravity is the mechanism of a Solar System, and Universe evolutions in our era. It is the theory of a gravity in 21 century. Eventually, Eqs. (22) and (23) Explained woven, distortions, ripples, and curvatures that appeared clearly in a dark fabric structure. Curvatures and vibrations in the dark fabric structure preserved the dynamical balance of a Solar System, it is the gravity language in present time. Eventually Cosmic Fabric Gravity is the Modern elegant theory of a Gravity at whole centuries. It is the best theory of gravity for past, present, and future. Without this theory the world will stay work in scientific mistakes forever. In fact, Cosmic fabric gravition theory is the best correction for the concept of a gravity. Eventually, Cosmic Fabric Gravity is the best theory of a gravity that acting directly on the structure, and evolution of a Solar System at whole.

## 13. Conflict of interest

Authors declare no conflict of interest.

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