

Black Holes Formation and Dark Fabric Distortions

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Abstract

In this work, we attempt to construct some novel solutions of a gravity mystery with several theories for a Gravitation namely: Newton's Theory of Gravitation, Einstein's Theory of the Gravitation, Dark Matter and Dark Energy Theory, Braneworld Gravity, Quantum Gravity, and the Cosmic Fabric Gravitation Theory. For this purpose, we use some mathematical equations, and MATLAB Program to draw the shape of a gravity as a dark fabric distortions in three dimensions. In the investigation, showing the discrepancies between the solutions of Gravitation mystery which obtained in past theories, and the new solutions of a gravity obtained by using different methods in present time by using the technology and modify the concept of a gravity. Furthermore, the Cosmic Fabric Gravity draws the Geometry of a Gravitation to a better understanding of the characteristics of a Gravitation in the present research work. The Gravity is acting directly on the Formation, Structure, and Evolution of a different types of the celestial objects. Dark Fabric was curved and distorted differently under the stress of a Planet, Stars, and Black holes.

Keywords: Black holes formation; Gravity; Dark Fabric Distortions; Escape Velocity.

1. Introduction

Recently, Birth and death of Stars are well-known subjects in the Astronomy. Life cycle of a low and high mass stars are main objectives in a present work. Stars are formed when interstellar gas clouds of a sufficient mass and energy collapse under their gravitational pull. This collapse transforms gravitational energy into thermal energy, thus heating the gas when nuclear fusion began at the heart of Stars.[1] When fuel of Star vanished at final stages of its life, it may explode with a big and luminous explosion which named a supernovae explosion, an example of a well - known supernova, namely M1 or the Crab Nebula. This supernova was recorded by ancient Chinese and Middleast astronomers in the year 1054, in its centre, a pulsar is observed. The remnant core of a high mass stars are named Neutron star or a black hole. Gravitational Theories and Black Holes Formation have gained growing attention, and in general a hot topic in the fields of natural science, and cosmology.

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Cosmic Fabric Gravity is a Space Pillars and new theory of a gravity at present time. Space is not absolute vacuum as we guess it, because it is filled with other matter called Dark Fabric Matter beside Visible Universe matter. Dark Fabric Matter named a Dark Matter and Dark Energy in the present time, and in the past called space time fabric according to the General theory of a relativity is the Einstein's theory of Gravity. Dark Matter Particles are interacting together like crystal lattice to build a Dark Fabric Structure in Three Dimensions. Dark Fabric consists of dark particles like subatomic particles where available inside the structure of an Atoms, ordinary matter, and Energy. Dark matter particles interact together like crystal lattice to form a dark fabric structure in three dimensions. 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. Dark Fabric was curved and distorted in three dimensions under the stress of a different celestial objects.

Cosmic dark fabric is a space's soft fabric, it has the ability to be stretched and contracted under the effect of a stress and energy of an ordinary matter and energy like the Stars, Planets, Satellites, Asteroids, Meteors, Neutron Stars, and Black Holes. Dark fabric can be curved and distorted differently under the stress of an objects with a different masses and density. The dense objects are drowning deeply into the structure of a dark fabric. The cosmic dark Fabric slightly curved, and distorted under the effect of our Star the Sun, and our planet the Earth. In another hand, the Cosmic dark fabric is warping strongly under the effect of a Giant and dense objects like the Neutron Stars, White Dwarfs, and Black holes. The Sun and Earth are two celestial objects with a low mass and density because they contained an ordinary matter and energy where floating into space inside a dark fabric. When the size of a Sun and Earth are shrinking strongly and become a Black hole may drowning deeply into a dark fabric because black holes are compacted objects of the Universe with high density and tiny sizes. Solid and Compacted objects where contained the compressed matter and energy. The Sun is a low mass star where nuclear fusion takes place at its center. White dwarf is a remnant core of a planetary nebula, after many billion years the white dwarf may produce a black dwarf when radiated most of its radiations and energy. Massive black holes are formed from remnant compacted core of a high mass Stars at the final steps of their life cycle. The remnant core of a high mass stars are neutron stars or black holes when exploded in the final stages of their life. Supernovae is a greatest and luminous explosion that well-known in the history. The star with 3 solar masses may form a black hole at its end stages. Supermassive black hole was formed from the death of a supergiant stars, and developed more and more when much amount of mass gathering from a space dusts and gas or from neutron stars and black holes collisions. Every active galactic nucleus contains the supermassive black hole. Supermassive black hole acting directly on the formation and evolution of a galaxy, it is the center of mass for a galaxy disc like the Sun is being a center of mass for the whole solar system. Internal planets orbit the Sun with a high speed as compared to speed of an external planets, because the dark fabric was curved and distorted strongly under the stress of a Sun which much closed to the internal planets, the tangential velocity of an internal planets is very high in the border of the Sun as compared to the speed of external planets according to the conservation law of angular momentum. In fact, the Cosmic Dark fabric was warped strongly in the region of Internal planets like 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 the edge of a Solar System Disc. 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 and oscillated 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 a far distance region 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 where objects moving slowly. What we see with our eye from our Sun or from the billions of stars in our galaxy is visible radiation that is emitted at the surface of the star, in the region so-called photosphere.[2] The optical emission produced by Thomson scattering in the much more tenuous atmosphere or corona above, is many orders of magnitude less intense and thus can only be seen when the solar surface is occulted (e.g., by the moon during a total solar eclipse).

2. Black Holes Formation

In fact, black holes are formed from remnant cores of a high and low mass Stars in the end of their life cycles. The remnant core of low mass stars like the Sun become a black dwarf at its final steps of its life, from the remnant core of a high mass star may born Stellar black hole. Black dwarf has low mass and tiny radius as compared to a mass and radius of stellar massive black holes. Black Hole is a region of a spacetime where the gravity is so strong that nothing, no subatomic particles or even electromagnetic radiations such as light or gamma rays can escape from it. In past, the theory of general relativity predicts that a sufficiently compact mass can deform spacetime to form a black hole.[3][4] The boundary of a black hole where no chance for any object to escape from it is called the Event Horizon. Although it has an enormous effect on the fate and circumstances of an object crossing it, according to general theory of relativity, it has no locally detectable features, we still don't know much about the fate of falling objects into a black hole.[5] In many ways, a black hole acts like an ideal black body, as it reflects no light that's why it is dark region. [6] In a world of star-quakes, anti-matter, red giants and white dwarfs, a star more massive than our own sun can disappear into a black hole from which not even light can escape. When this happens, the laws of physics have no meaning.[7][8] Moreover, quantum field theory in curved spacetime predicts that event horizons emit Hawking radiation, with the same spectrum as a black body of a temperature inversely proportional to its mass. This temperature is on the order of billionths of a kelvin for black holes of stellar mass, making it essentially impossible to observe directly.

Objects that their gravitational fields are too strong for light to escape were first considered in the 18th century by John Michell and Pierre-Simon Laplace [9]. The first modern mathematical solution of general relativity that would characterize a black hole was found by Karl Schwarzschild in 1916, and its interpretation as a region of space from which nothing can escape was first published by David Finkelstein in 1958. Black holes were long considered a mathematical curiosity; it was not until the 1960s that theoretical work showed they were a generic prediction of general relativity. The discovery of neutron stars by Jocelyn Bell Burnell in 1967 sparked interest in gravitationally collapsed compact objects as a possible astrophysical reality. Neutron Stars are massive and compacted objects of the Universe. It is the first evidence that considering the existence of a black hole. The first black hole known as such was Cygnus X-1, identified by several researchers independently in 1971 [10,11]. Black holes of stellar mass form from a remnant core of high mass stars when very massive stars collapse at the end of their life cycle. After a black hole has formed, it can continue to grow step by step by absorbing the mass from its surroundings. By absorbing other stars, neutron stars, planets, or merging with other black holes, supermassive black holes of millions of solar masses (M_{\odot}) may form. There is consensus that supermassive

black holes exist in the centre of most galaxies, especially active galactic nuclei. Following the figure (1) is the picture of a Black hole's formations at the end of Stars stages when their fuel runout and died. The remnant core of a died stars converted to a dark massive object that named black hole. The remnant core of a Solar mass Star named Black Dwarf. Furthermore, the remnant core of a Supergiant Stars called Stellar Black holes or black hole. Supermassive black holes formed from dead Supergiant Stars, or from many black holes when they are merging together during black holes collisions. Neutron Stars or white dwarfs combined together to produce black holes during collision processes because of their compacted density and mass in a tiny volume. The black hole is a dark region in the centre, the blue, white, yellow and red accretion disk surrounding it from outside according the type of materials, and their temperatures in the accretion disk, and the density of a black hole. Dust particles and gas in the accretion disk may give us the white, yellow, and red colors. Also, the gas molecules like oxygen atoms in the accretion disk given to us blue color. Accretion disk is circular ring of a gas and different materials which surrounding a black hole when an object falls into a black hole's attraction region. The escape velocity of an object is very high in the border of a black hole, most stars and objects were failed to escape from a black hole's massive attraction force.

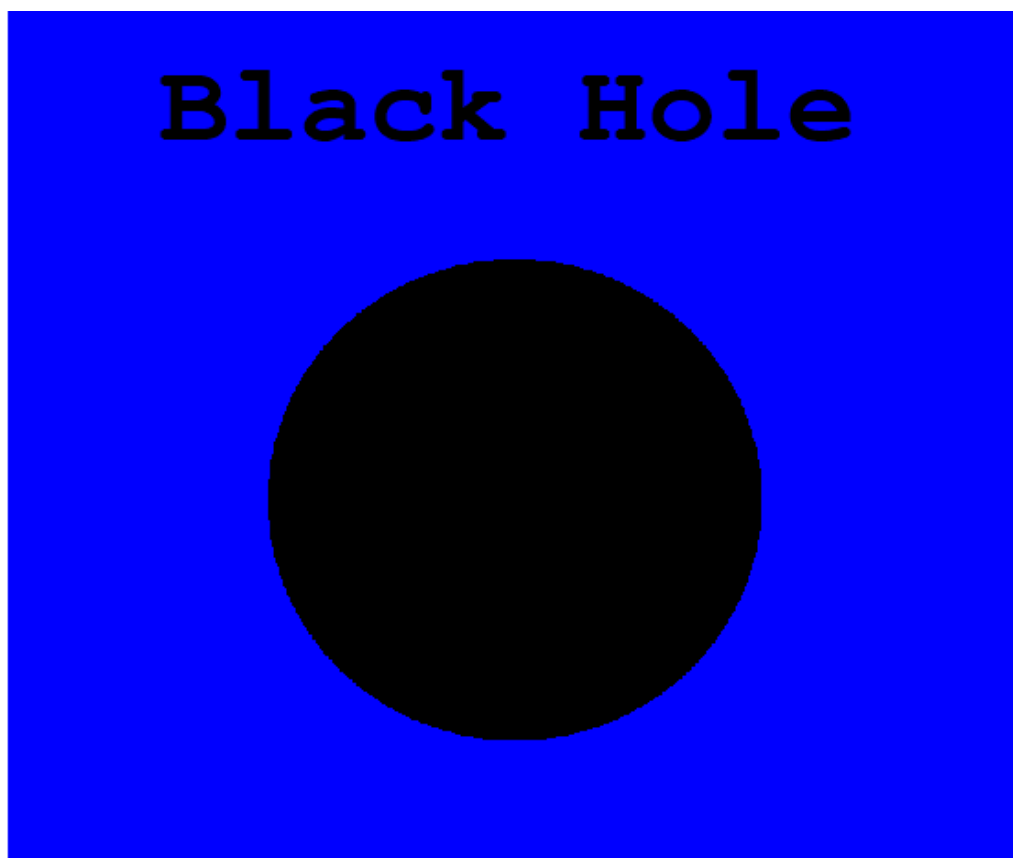


Figure1: Black Hole Formation in The Final Stages of a Star Life.

The presence of a black hole can be inferred through its interaction with other matter and with electromagnetic radiation spectrum such as visible light. Matter that falls onto a black hole can form an external accretion disc heated by friction, forming quasars. Quasars are some of the brightest and hottest objects in the Universe. Stars passing too close to the region of a massive gravitational field of a supermassive black hole can be shredded into streamers that shine very brightly before being "swallowed." [12] If there are other stars orbiting a black hole, their orbits can be used to determine the black hole's mass and its location. Such observations can be used to exclude possible alternatives such as neutron stars. In this way, astronomers have identified numerous stellar black hole candidates in binary systems, and established that the radio source known as Sagittarius A*, at the core of our galaxy that named the Milky Way galaxy, contains a supermassive black hole of about 4.3 million solar masses. According to conservation law of angular momentum Stars are orbiting a supermassive black hole with a high speed, especially close stars are moving with a speed higher than the distant stars.

Black holes are dense and compacted objects of the Visible Universe. The structure of a black hole incredibly compressed and distorted. Black holes have a combined and compacted structures. Whole Structure of a Black Hole gravitationally bound system of the Singularity, Event horizons, accretion disc, and compacted Dark Fabric surrounding it. The Structure of a black hole bounded together under the effect of a massive Gravitation of a black hole itself. The gravitation is a strong curvatures, distortions, and vibrations were occurred in the structure of a black hole and the dense Dark Fabric Matter that surrounding it at whole. Weight of objects are incredibly high inside any region of a black hole. The gravity has special meaning here, it is strong and violence. The massive curvatures and distortions represent the massive attraction force between objects inside the black hole structure, otherwise the vibrations and waves in a black hole structure represent the repulsion forces. The hydrodynamical balance between attraction, and repulsion forces was saved the Black hole from collapsing. The massive distortions and curvatures in the structure of a black hole led to compress, and bound entire regions of a black hole together. In another hand, the vibrations and waves in the black hole structure led to rip and expand it. Only a Static balance between attraction, and repulsion force kept the black hole from evaporation. Without the existence of a massive gravity between whole regions of a black hole, the black hole will rip and spread into space at short time. We suggest that the implemented approach is effective and efficient than other approaches, and the solutions gained in this paper will help us to explain black holes formation and massive distortions solutions geometrically, and mathematically. In fact, the Space filled with a dark fabric matter, it is interacting and acting directly on the ordinary matter and energy.

Black hole consists of a compacted singularity in the centre, and everything bounded to it by its supergravity. Black holes formed from remnant cores of a dead Stars. The Sun is a low mass star, approximately 4.5 billion years ago, the gravity pulled a cloud of dust and gas together to form our Sun. A massive concentration of interstellar gas and dust particles created a molecular cloud that would form the sun's birthplace.

The Sun is a Star, and consists of a Hot Plasma. The surface of the Sun is unstable because of a coronal mass ejection. The solar wind is a stream of charged particles flowing outwards from the Sun, creates a bubble-like region in the interstellar medium known as the heliosphere. The Sun is an average Star, it is located in the centre of a Solar System. The Sun is located 26,000 light-years from the centre of the Milky Way galaxy in the Orion Arm, which contains most of the visible stars as shown by naked eyes in the night sky. Light travels at an

incredible speed are 186,000 miles per second (300,000 km/sec) [13]. 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 Sun is a stellar system. Next 5 billion years the sun will die and remnant core of it will become a white dwarf, and the white dwarf may become a black dwarf after many years of its continuous radiations. At this moment the radius of our Star Sun is about 700000 kilometres. A small, solar mass black dwarf would have a Schwarzschild radius of about 3 kilometres. A black dwarf is a theoretical stellar remnant, the white dwarf is a remnant core of a Solar Mass Stars after its fuel runout, specifically a white dwarf that has cooled sufficiently that it no longer emits significant heat or light. Because the time required for a white dwarf to reach this state is calculated to be longer than the current age of the Universe, the age of our Universe is (13.8 billion years), no black dwarfs are expected to exist in the Universe as of now, and the temperature of the coolest white dwarfs is one observational limit on the age of the Universe [14]. The ultimate stage of stellar evolution for many stars is a black dwarf. Because they emit no heat or light, these objects would be a challenge to detect if they existed today. It can be detected only the moment when gas or dust particles when shining around it. The age of a black dwarf so long to form, it takes to many billion and trillion years to form. However, black dwarfs take quadrillions of years to form. At less than 14 billion years old, the Universe is still too young to have created any black dwarfs. It is impossible to detect black dwarfs at this era. Black holes are acting directly on the structure of a dark fabric and its distortions. It has great gravity and deeply drowning into the structure of a dark fabric. In next steps many scientists were explained the Gravity in the past according to their understandings. They have clear mathematical equations to explained the gravity in classical and modern Physics.

3. Gravity

Gravity is the attracting and repulsion force that appeared between two or more objects when they interacting together throughout the space between them. The weight of objects referred to the effect of gravitational forces that appeared between them directly. 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. On 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 rivers, Seas and oceans. The Universe entirely bounded together by 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 the large-scale structures in the Universe. Gravity existed everywhere, and has an infinite range, although its effects become weaker as objects get further away from one another. The gravity acting directly on the structure, formation, and evolution of all objects in the Visible Universe.

There are several theories of Gravitation namely: Newton's Theory of Gravitation, Einstein's Theory of the Gravitation, Dark Matter and Dark Energy Theory, Braneworld Gravity, Quantum Gravity, and the Cosmic Fabric Gravitation Theory.

The Classical theory of Gravity improved in past. 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. Newton predicted first famous equation for describing the gravity at his epoch. His law is one of the popular equations that used in high school level to higher education level. It is easy and simple mathematical formula equation for describing the gravity between two objects. It can be used to describe the gravity between different celestial objects of the Universe. 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 developed the theory of a gravity mathematically at his era when he was written his famous equation in the gravity, he changed our concept of a gravity from the past to a present time. [15] 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 centres of mass, the equation for Newton's Universal Law of Gravitation is:

$$F_g = G \frac{M \cdot m}{r^2} \quad (1)$$

where F_g is the magnitude of the gravitational force and G is a proportionality factor called the gravitational constant, G 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.

An application of a gravity developed when centrifugal force and equations related to it detected to describe circular motion of objects. The force needed by a body of mass m , to keep in a circular motion at a distance r , from the centre of a circle with velocity v , is the Centrifugal force F_c , as written as below:

$$F_c = \frac{mv^2}{r} \quad (2)$$

$$F_c = mr\omega^2 \quad (3)$$

Where the magnitude of centrifugal force F_c on an object of mass m at the distance r from the origin of a frame of reference rotating with angular velocity ω . 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 centre of rotation. This force, which is the outward pull of the ball on its string, is the centrifugal force. An object needs the centripetal force to keep in a circular motion is called the centrifugal force.

After Newton's theory of gravitation in classical Physics, Einstein come to exist to develop the new theory of gravitation in modern Physics is the General Theory of relativity that describes the Gravity as spacetime fabric curvatures. Einstein's theory of gravitation has an important astrophysical implication. 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 and subatomic particles, can escape as a remnant of an end state for massive stars. The black hole is a remnant core of a supermassive star after its death and explosion in the shape of a supernova.

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

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

where $R_{\mu\nu}$ is the Ricci curvature tensor, R is the scalar curvature, $g_{\mu\nu}$ is the metric tensor, Λ 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 4×4 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. Hubble concluded that the Universe is expanding, as written as above clearly in equation (4) Einstein done a big mistake in his theory when he added a cosmological constant Λ in General Relativity to keep the Universe static [16] 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. [17] Gravitational Field Equations and Theory of Dark Matter and Dark Energy is one of the main objectives of this article to describe a new set of gravitational field equations and to establish a new unified theory for dark energy and dark matter.[18] Dark matter and dark energy phenomena are two important phenomena, which requires a more fundamental examination of the law of gravity.

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, galaxy clusters, Planetary System, and Solar System. The Universe contains about 5% ordinary matter and energy, 23% dark matter, and 72% of a form of energy known as a dark energy. In another hand, ordinary matter and energy are visible dimensions of the Universe that called visible Universe. Visible Universe consists of an ordinary matter and energy like Atoms, Particles, and Radiations. 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 at whole. [19] In 1933, Swiss astrophysicist Fritz Zwicky, who studied galaxy clusters while working at the California Institute of Technology, made a similar inference. Zwicky applied the virial theorem to the Coma Cluster and obtained evidence of unseen mass he called dark matter at his moments of work.

Braneworld Gravity is another model of a gravity 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. 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 [20]. 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. 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.

Quantum gravity (QG) is another field of a gravity in theoretical physics that seeks to describe gravity in a much tiny world according to the principles of a quantum mechanics, and where quantum effects cannot be ignored,[21] such as in the vicinity of black holes or similar compact astrophysical objects, and where the effects of gravity are strong, such as Neutron stars and white dwarfs. Gravity is the attraction between two objects that have mass and energy, whether this is seen in Electron orbits the nucleus of an Atom. About four forces of Nature are acting directly on the Universe evolutions, structure and controlling it. These forces are Electromagnetic Force, Weak Nuclear Force, Strong Nuclear Force, and Gravity, also these forces are acting directly on everything that happens in atom and the Universe. 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. At distances very close to the centre of the black hole (closer than the Planck length), quantum fluctuations of spacetime are expected to play an important role [22]. 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. General relativity is the theory of gravity that founded to describe the Universe at whole, beside it the quantum mechanics theory developed to describe a microscopic world especially atomic structure. As a theory LQG postulates that the structure of space and time is composed of finite loops woven into an extremely fine fabric or networks. These networks of loops are called spin networks. Mathematically determined the evolution of a spin networks has an incurably tiny scale on the order of a Planck length dimension, approximately 1.6×10^{-35} meters. 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. Today we need to more professional theory to describe the whole things and interactions when occurred between Atoms, subatomic particles, visible Universe, dark fabric particles, and electromagnetic spectrum. It is best theory that work to describe all worlds from photons to a stellar structure, galaxy clusters, and galaxy strings.

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:

$$l_p = \sqrt{\frac{\hbar G}{c^3}} \quad (5)$$

Where \hbar = reduced Planck Constant,

G = Gravitational Constant,

C = speed of light in the vacuum,

l_p = Planck Length it is about 1.6×10^{-35} m.

At the moment, we need to bring the common theory of a gravity is a Cosmic Fabric Gravity to describe the whole balances and interactions between celestial objects of the Universe, Solar System, Galaxies, Atomic Structures, ordinary matter and energy, dark matter and dark energy, quantum gravity, photons, materials compounds, subatomic particles and photons. 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 subatomic particles, electromagnetic spectrums, and dark fabric structures, also it is working in the giant and large scale and structures of the Universe at whole like interactions between Galaxies, Stars and planets. It is new theory to describe all actions in the nature.

Cosmic Fabric Gravity is the common 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 Structures in the shape of curvatures, waves, ripples, zigzags, and distortions to transfer Energy among them, and to save general balance at the whole Universe and Atoms. 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 hard with them long time ago. This theory of gravity will open another window on the world of science.

Dark Fabric is a hidden dimension of a Universe beside bright fabric of a visible Universe are working together to control whole atoms and Universe together. Dark Fabric was existed before the creation of our visible Universe, Black holes, Stellar Systems and Planetary Systems. The Space is not vacuum totally, it is completed by dark fabric matter. The structure of a visible Universe, and ordinary matter entirely bounded and preserved together by a cosmic fabric gravity. It is the great preserver of the Visible Universe and atoms. Without the existence of the Dark Fabric materials in space and the role of a cosmic fabric gravity directly the Universe and atoms will rip forever. Cosmic Fabric gravity can effect on us and all shapes of objects where existing here in the Universe. All atoms in our body bounded together by cosmic fabric gravity. Both of Dark fabric and cosmic bright fabric have the combined structure and direct interactions together to build new type of gravity is the cosmic fabric gravity. Dark Fabric is another building block of a space, and Visible Universe. The direct interaction between visible Universe and Atoms occurred by the existence of a Dark Fabric that distributed everywhere in the great Space. Solar System structure and planetary system bounded together by the power of cosmic fabric gravity. Atomic system, Solar System, and galaxy clusters like any other systems of the Visible Universe formed and tightened together under the effect of a Cosmic Fabric Gravity. Cosmic Fabric Gravity is a new professional theory of a gravity that changed and improved our conception of the Gravity. The direct interactions between bright and dark fabric of the Universe called Cosmic Fabric Gravity. It is modern 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 at whole. It is the best theory of a gravity at the whole history of mankind from past, present to infinity future.

4. Dark Fabric Distortions

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

Furthermore, following the formula of a distortion equation to draw the effects of Stellar Structure evolutions in a Dark Fabric Structure:

$$z = \frac{1}{\cosh(x^2+y^2)} - \frac{\coth(x^2+y^2)}{\tan(x^2+y^2)} \quad (6)$$

By using MATLAB Program, and using Eq. (6) to draw the effect of Blackholes Formation on the dark fabric distortions, 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 here the figure of a life cycle of a Low Mass Stars the Sun and High Mass Stars where dark fabric curved and distorted under their masses and stresses. The dark fabric slightly curved and distorted under the effect of low mass Stars as Sun. Also, the dark fabric steeply curved and distorted under the effect of high mass Stars as Rigel Star. Star ends up at the end of its life depends on the mass it was born with. Low mass stars as Solar Mass Stars are formed from stellar nebula, its life cycle may take many billion years to die at final stages to produce new compacted objects named a black dwarf. The mass, pressure, and temperature of an average Stars not enough to burn its fuel at short time as compared to high mass stars. Star with a high mass has enough mass, gravity, density, temperature, and pressure to burn its fuel during million to billion years. When the fuel of a high mass star exhausted may explode like a supernovae explosion. The remnant core of a supernovae explosion named neutron star or a black hole. Atoms and materials in our body, in the body of animals and birds, and in the structure of meteors and planets all come from supernovae explosion when its external shell was expanded and evaporated into space.

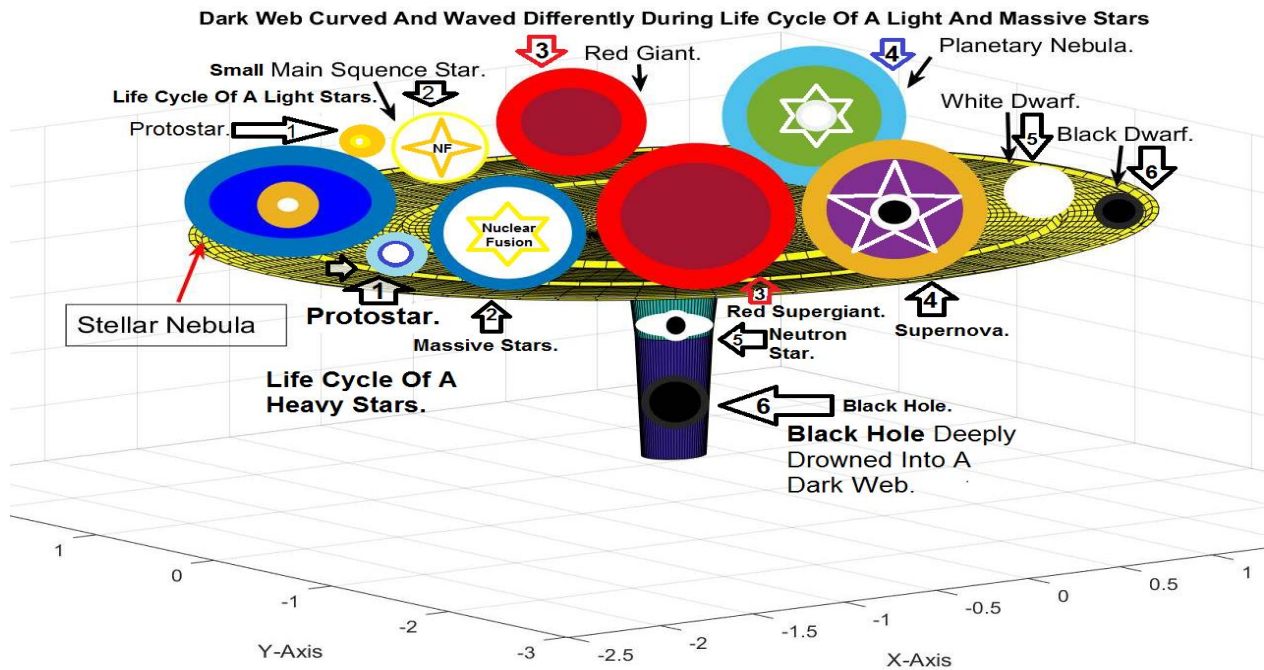


Figure 2: Dark Fabric Distortions During the Life Cycle of a Low and High Mass Stars.

The nebular hypothesis says that the Sun, Solar System and low and high mass Stars originally formed from the gravitational collapse of a fragment of a giant molecular cloud that named a Stellar Nebula [23]. [24] The various planets of a solar system are thought to have formed from the Solar Nebula, the disc-shaped cloud of gas and dust particles left over from the Sun's formation.[25] The currently accepted method by which the planets formed is accretion disc, in which the planets began as dust grains in orbit around the central protostar. From above Figure (2) shown clearly, the Sun and massive Stars were born from stellar nebula when protostars formed in first steps of a Star formation. A protostar is a very young star that is still gathering mass from its parent molecular cloud to grow more and to increase pressure on its core and to increase its central temperature to begin fusion processes in its heart in the second step of a Star evolution. The mass, gravity and temperature of a Sun and Stars may reach high level to fuse light atoms and produce heavy atoms in main sequence star life. The Sun and other massive stars become main-sequence stars at the second step of a Star Life when hydrogen isotopes fused together and produced the single helium atom with an emission of radiations, particles and heat. Nuclear fusion is a reaction in which the nuclei of two atoms are combined together to form one new heavy atom with the ejection of a subatomic particles (neutrons or protons). The difference in mass between the reactants and products is manifested as either the release or the absorption of energy or particles. The mass of a helium atom that produced less than the mass of a hydrogen isotopes which fused together because a fraction of mass converted to energy during nuclear fusion processes according to Einstein's law of an energy conversion. Supermassive stars can go in further steps of fusion processes to produce more types of a massive atoms. They can produce silicon, and Iron in their final steps of evolutions. Nuclear Fusion powers the Sun and Massive stars and produces virtually all elements in a process called nucleosynthesis. The Sun is a main-sequence star, and as such a low mass star, generates its energy by nuclear fusion of hydrogen nuclei into helium. An important fusion

process is the stellar nucleosynthesis that powers high mass stars, including the blue massive stars as O-type and B-type stars, and the low mass stars such as the Sun is a G-type main-sequence star in a yellow color. The primary source of solar energy, and that of similar size stars, is the fusion of hydrogen to form helium (the proton–proton chain reaction), which occurs at a solar-core when temperature reaches 15 million kelvins. The net result is the fusion of four protons into one alpha particle, with the release of two positrons and two neutrinos (which changes two of the protons into neutrons), and energy. About 5 million tons of a Sun's mass converted into energy in every second during nuclear fusion processes at the heart of a Sun. In heavier stars, the CNO cycle and other processes are more important processes. As a star uses up a substantial fraction of its hydrogen, it begins to synthesize heavier elements. The heaviest elements are synthesized by fusion that occurs when a more massive star undergoes a violent supernova explosion at the end of its life, a process known as supernova nucleosynthesis. Especially when the core of a massive star was filled with an Iron atom, the fusion processes may suspend because Iron atoms needed too much pressure and temperature to continue with a nuclear fusion, eventually the temperature of a massive star incredibly high that lead to explode a Star in the final steps of its Life. When the fuel of a low and High mass Stars run out, the Star may become a Red Giant in the third stages of a Stellar Structure Evolution. Red giant is an expanded star that has exhausted the supply of hydrogen and other elements in its core and has begun thermonuclear fusion of hydrogen in a shell surrounding the core. They have radii tens to hundreds of times larger than that of the Sun and Stars. However, their outer envelope is lower in temperature, giving them a reddish-orange colour. Despite the lower energy density of their envelope, red giants are many times more luminous than the Sun and massive Stars because of their great size. The stars may expand more and more in the stage four of a Star Evolution, an average Stars as the Sun's mass may become a Planetary nebula, and massive Stars such as a high mass Star will explode into space which named a Supernovae explosion. A planetary nebula is created when a normal star with a low mass blows off its outer layers after it has run out of fuel to burn. These outer layers of gas expand into space, forming a nebula which is often the shape of a luminous ring or bubble. In other hand, A supernova is a powerful and luminous step of a massive stellar explosion. The peak optical luminosity of a supernova can be comparable to that of an entire galaxy before fading entirely over several weeks or months after explosion. The remnant core of a Planetary Nebula is a White Dwarf, and Supernova explosion was left beyond itself the Neutron Star in a stage five of a Star Life. A white dwarf is the small, low luminous, faint, smooth, and a very dense star that remains behind after a planetary nebula has formed. A white dwarf, also called a degenerate dwarf, is a stellar core remnant composed mostly of electron-degenerate matter, its mass is comparable to that of the Sun, while its volume is comparable to that of Earth or Moon. A white dwarf's faint luminosity comes from the emission of residual thermal energy; no fusion takes place in the core of a white dwarf.[26] The nearest known white dwarf is a Sirius B, at 8.6 light years away from Earth, it is much smaller than a Sirius A. Sirius is the brightest star in the night sky, its name is derived from the Greek word means 'glowing'. White Dwarf radiates energy and radiation for many billion years to die entirely and become a Black dwarf in the final stage of a Star life. A neutron star is the collapsed core of a massive star, it is a remain core of the high mass star, after a supernova explosion in the end of its age. The remnant core of a Supernova explosion called a Neutron Star. When a high-mass star comes to the end of its lifetime, its outer layers collapse onto the core. This squashes the star's core to the tiny point where the atoms are smashed apart, leaving only neutrons. The structure of a neutron star contains mostly neutron particles. Also, Neutron star named the pulsar and a magnetar, because pulsar is a highly magnetized

rotating neutron star that emits different beams of electromagnetic radiations out of its magnetic poles. The radiations can be observed only when a beam of emission is pointing toward Earth, and is responsible for the pulsed appearance of emission. Eventually the remnant object of a white dwarf death is a black dwarf, and the remnant object of a neutron star was a black hole in the stage six of a star life. Scientists believed that the remnant core of a high mass star may become a neutron star or a black hole directly after a star death. Star formation and evolution much related to a Dark Fabric Distortions and a cosmic fabric gravity, that acting directly on the structure and evolution of a Star. Dark Fabric curved and distorted slightly under the stress of a low and high mass stars in the four stages of a Star formation and evolution such as a protostar in a first stage of a star formation, main sequence stars in the second stage when a nuclear fusion was occurred in the core of a Star, and heating it from out, in third stage the red giant and red supergiant directly expanded into space when their fuel runout, and the planetary nebulae and supernova explosion at stage four when stars expanded and exploded into space. Furthermore, the Dark Fabric curved and distorted very strongly under the stress of a compacted stars in the final stages of a Star evolution and star death such as a white dwarf and neutron stars in the stage five which formed from the remnant core of a planetary nebula and supernova explosion, at final stages the stage six the black dwarfs and black holes are two weird and compacted objects drowning deeply into a dark fabric structure because of their infinity density and pressure. The Cosmic Fabric gravity is the hidden machine of a Stellar Structure formation and Evolution. Dark fabric interactions with a star formation and evolution lead to develop Star's life from star birth to its death.

5. Superdistortions and Escape Velocity

The Sun is one of many billions of Stars swimming inside the disc of our Galaxy that called the Milky Way Galaxy. For thousands of years, Astronomers, Religious Communities, and Astrologers believed that the Earth was at the centre 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 swimming around our planet that named the Earth. Unfortunately, in past they couldn't understand the laws and equations of a gravity, and dark fabric distortion equation. Dark fabric curved and distorted differently under the stress of objects with high and low masses. It is a vision mistake, and misunderstanding Astrophysics at those moments. 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 actually orbit the Sun. Especially, after Newton, Kepler, and Einstein's Equations were used and explained mathematically that the Sun is at the centre of our Solar System and Earth is only a planet orbits the Sun, because the Sun contains more than 99.86% of the total mass of a Solar System.

Sun is only a tiny object inside the disc of a Milky Way. Its mass and gravity not enough to be the centre of mass for all galaxy or Universe. It is one of 400 billion stars where swimming inside the gravitational disc of our Galaxy the Milky way. Furthermore, our galaxy is swimming inside galaxy cluster and Galaxy strings. The Universe is a bright fabric of galaxy strings and dark fabric matter were interacting together to transfer energy and keep the total balance of a whole Universe. Figure (3) clearly shown the dark fabric curved and distorted under the effect of a Sun, Earth, and Black Holes because of their different masses and density. The dark fabric curved and oscillated slightly under the stress of a Sun and Earth, because the Sun is a Star, and Earth is a planet

both of them consist of Atoms and Molecules, where more than 99.99999% atom structure is a vacuum. Atom and molecules are mostly empty where floating in the space easily. The density and mass of a Planet and Stars mostly very low as compared to the Black hole's density and mass. Black holes are compacted objects of the Universe, where Atoms and molecules are squashed together into unknown type of matter is a compressed matter in a tiny size with a great density. Inside the structure of a black hole subatomic particles are shrinking together to be compacted in the level where more than 99.99999 % the structure of a compacted matter was filled with massive matter and energy at a giant density. Black hole consists of three main regions are Singularity, Event horizons, and accretion disc. The singularity is a compacted region which located in the centre of a black hole where ordinary matter and dark fabric matter distorted steeply. Singularity is a great regression region where the density and gravity are very high even light can't escape from its super distortion. The massive curvature of a dark fabric under the pressure of a Black Hole leads to attract and bound accretion disc tightly. Furthermore, dark fabric curved and distorted slightly under the pressure of a Sun and Earth, but it is warped steeply under the stress of black holes. 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 stress of a Sun in a close border of a Sun, the massive curvatures and oscillations lead to accelerate internal planets motion. In other hand, The External Planets of a Solar System orbit around the Sun with a low speed, because the dark fabric was distorted and oscillated slightly under the pressure of a Sun in an external border of a Solar System, the weak curvatures and oscillations in the dark fabric structure where 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, Earth is an internal planet orbits the Sun quickly as compared to the speed of a Neptune in the group of an external planets. The dynamical balance between Sun, and all the Planets, Asteroids, Satellites, Comets was kept the Solar System Family from ultimate evaporation. In fact, the massive curvatures of a dark fabric under the Sun's stress, and the weak curvatures of its planets, asteroids, and satellites under their tiny masses was saved the solar system family to many billion years.

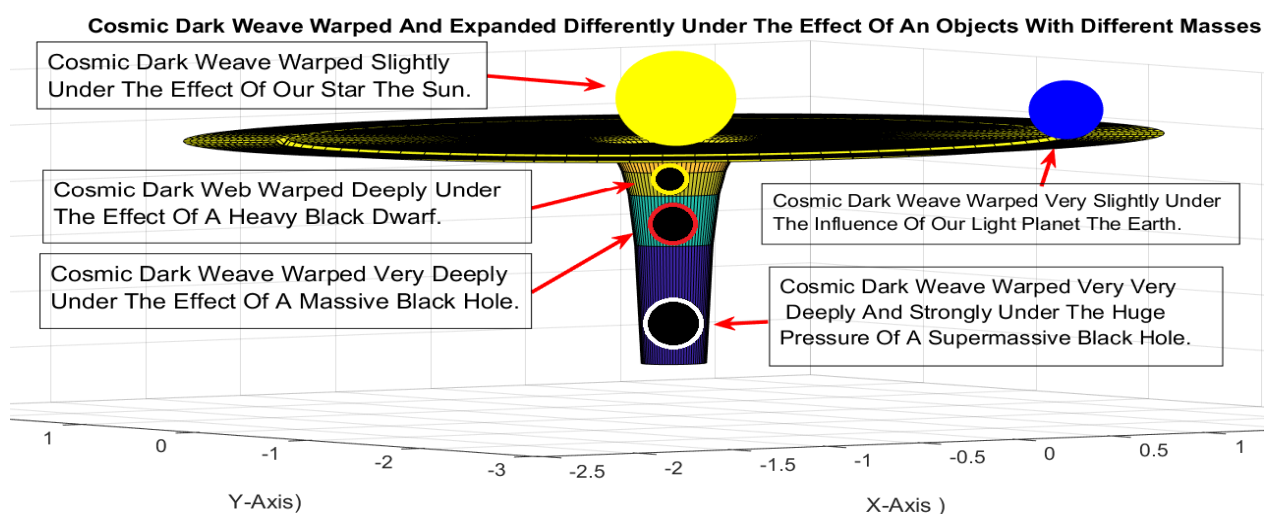


Figure 3: Dark Fabric Distortions Under the Pressure of a Celestial Objects.

Escape velocity, in astronomy, astrophysics, cosmology, and space exploration was explained mathematically, the velocity that is sufficient for a body to escape from a gravitational centre of attraction without undergoing any further acceleration. The velocity of escape from the less massive Moon is about 2.4 km per second at its surface. You must have seen rockets when leaving the earth to go into space, they require a very huge kick-start in order to leave the surface of the Earth with a high escape velocity. It is because of the strong gravitational field of the surface of our planet the Earth, for this reason an escape velocity comes into the subject. In this work, the escape velocity formula maybe explained and see how the formula can be used to find out the escape velocity of any object from Earth, Sun, and Black holes surfaces. It is referred to as the minimum velocity needed by anybody or object to be projected to overcome the gravitational pull of the celestial objects surfaces like Earth and Satellites. In other words, the minimum velocity that one requires to escape the gravitational field is an escape velocity. Basically, it means escaping the land without any chance of falling back. Therefore, any object or body having escape velocity on the surface of the earth can totally escape the gravitational field of the earth in addition to avoiding the losses due to the atmosphere friction force. The basic concept is based on the conservation of energy where the Kinetic Energy (KE) of the satellite at launch equals the Potential Energy (PE) at the escape point.

$$KE_{lost} = PE_{gained} \quad (7)$$

$$\frac{1}{2}mv^2 = \frac{GMm}{R} \quad (8)$$

$$v_{escape} = \sqrt{\frac{2GM}{R}} \quad (9)$$

Where v_{escape} = escaped velocity of an object,

G = Gravitational Constant,

m = the mass of an escaped object,

M = the mass of a high Mass Objects as Planets, Stars, and black holes,

R = the radius of a Planet, Star, and black holes.

Escape velocity refers to the minimum velocity which is needed an object with a mass m to leave a planet or Moon. For instance, for any rocket or some other object to leave a planet, it has to overcome the pull of gravity of a planet. The mass and gravity of a planet incredibly high as compared to the mass and gravity of an object that pushed away to leave the surface of a planet, it needs to a high escape velocity, and great kinetic energy to leave the surface of a planet forever. For a given gravitational potential energy at a given position, the escape velocity is the minimum speed of an object without propulsion needs to have sufficient kinetic energy to be able to "escape" from the gravity pulls, that is, so that the gravity will never manage to pull it back again. In this point the escape velocity of an object may overcome the gravity. The escaped body will move into space with a giant kinetic energy and velocity. Escape velocity is a no return velocity. It is the actual speed that an object

needed to leave their parent location forever. Following an equation of the Schwarzschild radius (sometimes historically referred to as the gravitational radius) is a physical parameter in the Schwarzschild solution to Einstein's field equations that corresponds to the radius defining the event horizon of a Schwarzschild black hole. The Schwarzschild radius was named after the German astronomer Karl Schwarzschild, who calculated this exact solution for the theory of general relativity in 1916. The Schwarzschild radius of a black holes as written as below:

$$R_{Schwarzschild} = \frac{2GM}{c^2} \quad (10)$$

Where c = escaped velocity of an object with the speed of a light,

G = Gravitational Constant,

M = the mass of an Object when shrinking to become a black hole,

$R_{Schwarzschild}$ = the Schwarzschild radius that named an event horizon's radius of a black hole.

According to equation (10) the Schwarzschild radius of an object is proportional to its mass. The Sun has a Schwarzschild radius of approximately 3.0 km, whereas Earth's is only about 9 mm and the Moon's is about 0.1 mm. Black hole with 3 solar masses has a radius about 9 km, and supermassive black hole with a mass 4 million solar masses has a Schwarzschild radius of approximately 12 million Kilometer. The observable Universe's mass (9×10^{52} kg) has a maximum Schwarzschild radius of approximately 13.7 billion light-years. The Milky Way galaxy mass (1.6×10^{42} kg) has a Schwarzschild radius of approximately 0.25 light-years.

The Planck Mass (2.18×10^{-8} kg) has a minimum Schwarzschild radius about 3.23×10^{-35} m, it is twice the Planck Length where equals 1.6×10^{-35} m. An object with a high mass may produce a black hole with large radius. The radius or diameter of a black hole depended only on the mass of an abobject which compressed to form a black hole. An object with a low mass may produce a tiny black hole when its materials incredibly distorted and compressed to the level where vacuum closed to zero inside the structure of this compacted object.

Table 1: Escape velocity From the Surface of celestial Objects with a Clear Mass and Radius.

Objects	Mass=M (Kg)	Radius=R (km)	Escape Velocity = v (Km/s)
Earth	5.97×10^{24}	6371	11.2
Sun	2×10^{30}	700000	615
Black Dwarf	Solar Mass	3.00	300,000
Black Hole	3 Solar Masses	9.00	300,000
Supermassive Black hole	4 million Solar Masses	12000,000	300,000

According to Eqs. (9) and (10), and Table 1.0 an escape velocity of an objects as Earth, Sun, Black Dwarf, Black hole, and supermassive black hole was calculated when their masses and radius are used into above equations. Earth's escape velocity is about 11.2 km/s, Sun's escape velocity is 615 km/s, Black dwarf with a

Solar mass, black holes with 3 solar masses, and supermassive black holes with a 4 million solar masses have same an escape velocity is about 300,000 kilometer per second. Radius of our planet the Earth is about 6371 kilometers, the Radius of our Star the Sun is about 700,000 kilometers, the radius of black dwarf is 3-kilometer, black hole with 3 solar masses has a radius about 9 kilometers, and supermassive black hole with a 4 million solar masses has a maximum Schwarzschild radius about 12000000 kilometers. The escape velocity of an objects from the surface of black holes equal to the speed of a light is about 300,000 km/sec, it is greatest well-known speed that determined in the nature, it is the speed of a light particle. Light has a particle and wave properties. It is propagated in the space with a high speed about 300,000 km/sec. When reviewing a refractive index chart there is a relationship to the density of the medium and the velocity of electromagnetic radiations through the medium. The lower the density the greater the velocity. The speed of a light particle will increase and decrease with the density of a medium. Its speed may increase when density of a medium decreased, otherwise the light speed may decrease when the density of a medium for a light that decreased passed throughout it.

6. Conclusion

In a present paper, the effect of a Gravity on a Star Formation and Evolution was explained by several theories. According to my understanding to the Gravity, the Cosmic Fabric Gravity is a best new theory for a gravity in Astrophysics, and Cosmology that explained the effect of a Star, Planets, and black hole's formation on the dark fabric distortions. Cosmic Dark Fabric was warped slightly under the stress of Star and Planets, it is distorted strongly under the pressure of a Black holes. Formation and Evolution of a Star, Planets, and black holes are acting directly on the dark fabric distortions. Dark Fabric distorted weakly under the stress of a Planet and Stars because of their minimum mass and density. Furthermore, the Dark Fabric was distorted actively under the stress of a tiny and great black holes because of their great density. Dark Fabric proportionally warped under the stress and energy of an objects with a different masses and density. Finally, we could conclude that the Cosmic Dark Fabric is acting directly on the formation and evolution of a Star, Planets and Black holes. Eventually, Eq. (6) was Explained woven, distortions, ripples, and curvatures which appeared clearly in a dark fabric structure. Curvatures and vibrations in the dark fabric structure preserved the dynamical balance of a black hole. Accretion disc was tightly combined to the black hole according to conservation law of angular momentum. Black holes are compacted objects of the Universe where dark fabric compressed and distorted actively under their stress and energy. There are no enough chance for particles to escape directly from black hole's supergravity. The light particles can only escape in the edge of a black hole where accretion disc and outer event horizon was curved and distorted slightly to the black hole. In the heart of a black hole the singularity is a great regression and closed region of black hole where cosmic fabric incredibly warped and curved under the pressure of a black hole.

7. Conflict of interest

Authors declare no conflict of interest.

8. Source of funding

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