Transactions on Engineering and Computing Sciences - Vol. 12, No. 2
Publication Date: April 25, 2024
DOI:10.14738/tecs.122.16526.
Sadiq, S. (2024). Black Holes Effect on Rapid Stellar Jumps and Tidal Disruptions of Stars. Transactions on Engineering and Computing Sciences, 12(2). 21-35.
SERVICES FOR SCIENCE AND EDUCATION

Black Holes Effect on Rapid Stellar Jumps and Tidal Disruptions of Stars

Sabir Sadiq
Kurdistan Space Agency, Shiladoze, Duhok, Iraq, Kurdistan

ABSTRACT

In the present work, black hole tunnel effect on a rapid stellar jumps and tidal disruptions of stars are two important subjects in this discussion. The life cycle of stars gone slowly when stars being in distant places from a black hole, otherwise the life cycle of low mass stars and high stars are gone quickly with burning much of their fuel of fusion when such stars orbit the black hole closely. Gravity is a cosmic fabric distortion in the three dimensions under the effect of black holes, Planets, and stars. Stars and planets are tidally disrupted by celestial objects and black holes. Cosmic fabric matter is warping strongly during direct interactions between Stars and black holes. The surface temperature and luminosity of stars will increase rapidly when they orbit the black hole in much close region. The centre of star may shrink inward and its atmosphere will expand outward shown clearly like blue spikes and spicules of hot plasma on its surface after an excited star passed close to the black hole or orbits it.

Keywords: Black hole Tunnel, Stellar Jumps, Tidal disruption of Stars and Planets, Cosmic Fabric, Gravity.

INTRODUCTION

Low mass Stars and high mass stars are formed from a stellar nebula, Nebula is a great cloud of dust particles, gas, and plasma that distributed in the large location of Universe. [1][2] All types of Stars were formed when sufficient amount of mass was collapsed and squeezed inward under gravitational pressure to produce first star that named a protostar. [3] The Sun and solar system were formed from solar nebula when sufficient mass of dust and gas combined together gravitationally, it means that an origin of Sun and all types of stars was started from stellar nebulae. The Orion Nebula is a distant place where massive stars formed from in the Milky Way Galaxy. Actually, Protostar will collect high enough materials from its surrounding to become much denser and hotter to start with a nuclear fusion at its deep heart when faced to high pressure, and becomes a main sequence Star, the Sun is a main sequence star.

All main sequence stars may die in the future when their fuel of fusion suspended entirely, the star may become a red giant or red supergiant in the final steps of star's lifetime. [4] Red supergiant star is a huge star that expanded outward after nuclear fusion was failed to be continue at its deep heart. Red giants have very big sizes and lower temperatures. Solar mass star may become red giant stars, but high mass star will expand more to become red supergiant stars. [5] High mass stars may die as big and luminous explosion that named a supernova. Star may die depending on its mass, pressure and temperature. A High mass star's death occurs during short lifetime as a supernova explosion when its fuel was used during fusion processes

very quickly due to its high mass, gravity, density, and temperature, the remnant core of such died stars named a neutron star or a black hole according to the mass of an exploded star. [6] Nuclear fusion is occurred at the core of a low mass stars and process gone very slowly, as a result the life time of a low mass star is longer than the life time of a high mass star. Nuclear fusion process was run very quickly at the heart of all massive stars, as a result high mass star may dies during several million years to become a stellar black hole. Black hole itself was formed from a remnant core of a low mass or High Mass Stars. Black hole is much compacted celestial object, it has small size but great mass squeezed in it. Black hole has a great density and gravity, as a result cosmic fabric was distorted and tided strongly under its effect. [7][8] Massive stars have the mass more than 3 times the mass of Sun. Fortunately, the nuclear fusion takes place at the heart of both a low mass star and high mass star, but massive star at the end of its lifetime may die urgently to produce a stellar mass black hole, but low mass star may die after long time of continuous fusion processes to give birth for new small size of black hole that named a black dwarf [9][10]. Our galaxy milky way contains more than 300 billion bright stars, other galaxies filled with trillion galaxies with different masses. Most galaxies are contained planets, natural satellites, compact stars, and black holes with different sizes.

Main objective of this project to explain a black hole tunnel effect on the rapid stellar jumps and tidal disruptions of stars, and another aim of this project to discuss how tunnels and Superdistortions were formed after black hole passed urgently through the fabric of a Universe.

BLACK HOLES

Black holes are much compacted objects in the whole Universe. There are two main types of black holes such as Low mass black holes, and high mass black holes, all types of black holes were formed from the remnant cores of dead stars. Low mass black hole was formed from the death of a low mass star, especially solar mass star. Furthermore, high mass black hole was formed from the remnant core of a high mass star after its death in the shape of a super explosion. When star died at final moments of its life, its atmosphere will expand outward, and its core will shrink inward to become much denser and darker object that named a black hole. [11] Tiny black hole or primordial black hole are low mass black holes that formed during radiative era of the early Universe when big bang started and inflated at the first steps of Universe expansion. Tiny black hole is much smaller type of black holes. Black Dwarf is another type of black hole which formed from dead core of solar mass star; the radius of a solar mass black hole is only 3000 meters. Stellar mass black holes were formed from dead core of massive stars when exploded as supernova, the radius of stellar mass black holes exceeded to many hundreds and thousands of meters.

In fact, black hole is a great gravitational region, where all types of matter and energy attracted and sucked actively into its centre [12]. Supermassive black hole is another type of high mass black holes when its mass reaches to million or billions of times the Sun, and its radius exceeded many million times the radius of a Sun, most galaxies contained at their centre a supermassive black hole can swallow stars rapidly [13]. Supermassive black hole is much powerful types of black holes that kept the dynamical balance of a whole galaxy, without the role of a supermassive black hole the galaxy may rips quickly into space. Stars, gas, and dust particles are in the rapid motions in the region which much closed to the centre of a galaxy. Centre of

most galaxies are contained powerful black holes, in the center of a milky way galaxy located a supermassive black hole with a mass four million times the mass of a Sun. Stars, Planets, gas, and dust particles are in rapid motions around the centre of galaxies where a monster black hole hidden here.

TIDAL DISRUPTIONS OF STARS

Tidal disruption of Stars is important subject in astronomy and cosmology. Stars are luminous and hotter celestial objects. Stars can be classified according to their masses into low mass stars, and high mass stars. High mass star is a star with a great mass and higher surface temperature, nuclear fusion takes place at its heart very actively and largely. High mass star may end on its fuel urgently to explode as a supernova. The Sun is a main sequence star, both of its mass and central temperature are not very high to burn its fuel rapidly. Lifetime of low mass stars is longer than the lifetime of High Mass stars. The nuclear fuels of high mass stars may run out quickly, they may expand into outside to become red supergiant stars, eventually red supergiant will expand more and more to explode as a giant explosion that named a supernova, and its remnant core may become a Neutron star, or black hole according to the mass of a collapsed star. Low mass star will become a planetary nebula, its remnant core may become white dwarf and black dwarf after many billion years of suspended nuclear fusion. The lifetime of stars is going slowly if the star survives in a distant place from black hole effect. The star in a place so close to the black hole death region may accelerate to burn on its fuel or lose a fraction of its mass [14]. Supermassive black holes have stronger tides on neighbour stars. In fact, Tidal disruptions of the star may increase dramatically when it orbits the black hole, because Black hole has the greatest gravitational field, and gravitational waves. Tidal disruption of a star is not so strong when a star is located inside the stellar clusters and faced with a direct disruption with any stars there. Furthermore, planets, and meteors do not have such a powerful effect on the star tides. Black hole is a monster in the Universe that accelerates stars to move with an incredible speed. The tangential velocity of a star depends on the mass and gravity of a black hole, and the distance between the star and black hole itself, high mass black hole has a stronger effect on the star to move faster and lose much of its mass and energy, when the star falls in direct competition with a powerful black hole. Tidal disruption of Stars is directly proportional with a mass of black holes. A low mass black hole has a lower effect on the disruption of stars. Scientists detected the effect of tidal disruption of stars by black holes when different electromagnetic radiations such as Gamma rays and X-rays were collected by space technology and radio telescopes. Tidal disruption of stars is caused by Celestial objects and black holes.

Tidal Disruptions of Stars by Celestial Objects

Tidal disruption of stars could be happened very slightly by any normal celestial objects even their masses were not so great. Moon is a reason of ocean and sea tides. Tidal disruption of stars could be done by Protostar that formed at first stages of a star's lifetime, because it is formed from a stellar nebula in much violent region of the Universe inside a Nebula, it can tide neighbour stars. Main sequence star is a second stage of a star's lifetime when nuclear fusion takes place at the heart of it deeply, when small atoms fused together to produce some new heavy atoms, and released huge amount of energy, it is another reason of star disruptions. Sirius A, and Alpha Centauri both are massive main sequence stars where nuclear fusions at their heart are much active than the fusion at the core of low mass stars. Sirius is a binary star system

with the two components designated as a Sirius A and Sirius B both are gravitationally bounded together and tide one another; Sirius B is a white dwarf star that tides Sirius A actively. Low mass stars, high mass stars, red giant stars, and supernovae are another reason of star tides. Supernova is a violent type of star explosions in the Universe that causes star disruption. Planets orbit a star in stellar system is another common reason of slightly star tides. There are several planets, natural satellites, comets, meteors, and meteorites orbit around a single star in the stellar system, they have direct effect on its own star disruptions very slightly. Solar system is a uniform gravitationally bound system of gas, dust particles, asteroids, comets, natural satellites, and planets all of them are orbit the Sun and have effects on its activity. The Sun is a normal mass star that located at the centre of a solar system, its family members are acting directly on its activity when increased and decreases its action and fusion processes during different times of years. The solar cycle or Solar Storms, also known as the solar magnetic activity cycle, where sunspot cycle or periodic 11-year change in the Sun's activity measured in terms of variations in the number of observed sunspots on the Sun's surface [15][16]. Solar cycle and solar storms maybe caused by tidal disruptions of planets, asteroids, and comets where orbit the Sun. The Sun is a star that effected and tided by its family members. If a black hole visit into the Solar System, the Sun will be affected by unusual tides and actions, the Sun will become hotter and faster in jumping and Plasma evaporations. Black hole is a main reason of a star's tides.

Tidal Disruptions of Stars by Black Holes

Tidal disruption event (TDE) is an astronomical phenomenon that occurs when a star moves sufficiently close to the border of a supermassive black hole (SMBH) to be pulled apart by the black hole's strong tidal force that named spaghettification. Tidal disruption of stars takes place strongly by compacted celestial objects such as white dwarf stars, neutron stars, and black holes. [17][18] Black holes have much greater power for star tides, because they are much denser and compressed celestial objects in the whole Universe. Lifetime of stars will be shorter when passed close to the black hole, because the black hole has powerful tidal force. Cosmic fabric matter and energy is strongly distorted and warped under the effect of black holes with different masses. [19] Black holes have much power and density to make powerful distortions and tidal disruptions in the fabric of a Universe. The density and pressure of black holes are very high to attract and repulse neighbour stars actively. When star falls into direct fighting with a black hole, it will accelerate in burning on its fuel. If stars burning its fuel quickly will die in a shorter lifetime. The fusion processes in the heart of stars will increase rapidly with burning much amount of fuel after star passed beside black hole or black hole passed beside it. [20] In the fusion process changes in the balance of mass was occurred partially, the total mass of a produced atoms is lower than the total mass of a reacted atoms, the missing mass was converted into particles and an energy according to a well-known Einstein's equation of energy conversion as written as below when the speed of light c is constant:

$$E = mc^2 \quad \textbf{(1)}$$

Where E is the energy in unit joule, m is the missing mass in kilograms, and c is a speed of light in m/s, speed of light in vacuum equals to $3 \, x \, 10^8$ meters per second. The Sun produces huge amount of energy when hydrogen isotopes are fused together under high conditions of fusion

and helium atom was produced from fusion. According to eq. (1) about 5 million tons of Sun's mass converted to energy at every second, and it equals to ($4.5\ x\ 10^{26}\ Joules$). The Sun has enough fuel to keep its fusion process more than five billion years later. The Sun is a normal star at the center of the Solar System, it is a perfect ball of hot plasma, and heated by nuclear fusion reactions in its core. [21] Following nuclear Fusion of two hydrogen isotopes are Deuterium and Tritium (H^2 and H^3) fuse together to form a heavier nucleus is a helium atom $\boldsymbol{^4_2He}$ plus a neutron $\boldsymbol{^1_0n}$ and 17.6 Mev that produced from reaction. Hydrogen fusion equation could be written as:

$$\boldsymbol{H^2 + H^3 \rightarrow {}^4_2He + {}^1_0n + 17.6\ MeV} \qquad \textbf{(2)}$$

The stars are hot spheres of plasma and luminous objects in the heaven. They radiate radiations in all directions with different frequencies and wavelengths, the star's luminosity L can be calculated mathematically by using eqs. (3) and (4). The stars have their different effective surface temperatures. The surface temperature of a Sun is about 5800 kelvins, and other high mass stars may exceed 30,000 Kelvins. High mass stars have hotter surface temperature as compared to the low mass star's temperature. In fact, high mass star has nuclear fusion of different atoms to produce many new atoms, and to feed its outer atmosphere with an additional temperature. [22] The luminosity of a high mass star is higher than that the luminosity of a low mass star, high mass stars have large area, and hotter surface temperature as compare to any other low mass stars. The Stefan–Boltzmann equation used to determine the luminosity of stars:

$$\boldsymbol{L = \sigma A T^4} \qquad \textbf{(3)}$$

Where **L** is the luminosity of low mass stars and high mass Stars, $\boldsymbol{A}$ is the surface area of a Luminous Stars, $\boldsymbol{T}$ is the effective surface temperature of Stars and black body radiations that measured in kelvins, and $\boldsymbol{\sigma}$ is the Stefan–Boltzmann constant with a value $5.670374419\times10^{-8}\ \mathrm{W\cdot m^{-2}\cdot K^{-4}}$. According to eq.(3) Sun's luminosity is calculated mathematically and defined clearly by the International Astronomical Union to be ($L\odot = 3.828\times10^{26}$ W). This value is same as that calculated by eq. (1) above founded it by Einstein's equation of an Energy. Nuclear fusion in the heart of high mass stars is going actively because they have high mass, pressure, and temperature. Stars are fuelled by thermonuclear fusion processes, where at their cores high temperature and pressure overcome atomic nuclei's natural electric repulsion, and allowing atoms to fuse into new heavier elements. The nuclear fusion is a main source of energy and luminosity for all types of stars, following an equation that makes comparisons between the luminosity of dwarf stars, high mass stars and Sun:

$$\boldsymbol{L = L\odot\left(\frac{M}{M\odot}\right)^{3.5}} \qquad \textbf{(4)}$$

Where L is the luminosity of stars as compared to the luminosity of a Sun $L\odot$. M is the mass of stars, and ($M\odot = 2\ x10^{30}\ kg$) is the mass of Sun. The luminosity of stars is directly proportional with a mass of a star M, where the luminosity of star may increase when its mass, pressure, and surface temperature increased. Luminosity is a measure of radiated

electromagnetic power from luminous objects, where it is an energy E that lost per unit time t by stars, and luminous objects according to following equation:

$$\boldsymbol{L = \frac{dE}{dt} = \frac{E}{t}} \quad \textbf{(5)}$$

After 10 billion years later the Sun will die, it may become a red giant star:

$$\boldsymbol{t = \frac{E}{L} = 10^{10}\ years\ (\ M/(M\odot)(L/L\odot)^{-1}} \quad \textbf{(6)}$$

$$\boldsymbol{t = T\odot(\frac{M\odot}{M})^{2.5}} \quad \textbf{(7)}$$

Where $\boldsymbol{t}$ is the Lifetime of stars as compared to the Lifetime of a Sun $T\odot$, where Lifetime of a Sun is so long about 10 billion years ($T\odot$=$\mathbf{10^{10}}$ years), M is the mass of star, and $M\odot$ is the mass of Sun, the Lifetime of star $\boldsymbol{t}$ is inversely proportional with a mass of star M, where the Lifetime of star may decrease when its mass increased. For star with a mass 30 solar masses, and its lifetime becomes (t = 2028602 years). The life time of stars will be shorter when passed beside a black hole, because the tidal force of black hole is higher and stronger on the neighbourhood black holes. Stars will start to burn on its fuel quickly when orbits a black hole. The low mass stars such a Sun will not burn hydrogen isotopes only when passed beside a black hole, it may start with new types of fusion such as helium or carbon fusion or more heavy atoms when sun orbits the black hole. Black hole has high effect and stronger tidal forces on stars to accelerate their nuclear fusion processes. Solar mass stars will die before 10 billion years when scientists believed with if sun orbits a black hole. The pressure, temperature, and luminosity of stars will increase directly proportional when pass quickly much close to the orbit of a black hole. One of the most common misconceptions about black holes is that they are invisible celestial objects. Black holes are hidden objects, and drowning at the bottom of extremely deep gravitational potential wells, dust particles, and gas in the edge of black holes are flowing rapidly into a black hole will frictionally heat up to millions of degrees and will become extremely luminous with emission of gamma rays, x-rays and ultraviolet ionizing radiations. In fact, some of the most luminous objects in the Universe are quasars, scientists believed to be produced by actively accreting supermassive black holes at the centre of galaxies, supermassive black holes are heating and feeding quasars with such powerful gravitational energy and luminosity. Supermassive black hole has high mass and powerful tidal disruptions force on stars and planets. [23] Tidal disruptions radius can be calculated according to following equation:

$$\mathbf{R_t = R_*\ (\frac{Mbh}{M_*})^{1/3}} \quad \textbf{(8)}$$

Where R_t is the tidal disruption radius, M_* is the mass of a disrupted star, R_* is the radius of a disrupted star, M_{bh} is the mass of a black hole. According to eqn (8) Tidal disruption radius R_t is directly proportional with the radius of stars R_* and mass of black hole M_{bh}, and inversely proportional with the mass of stars M_*. Star is ripped apart by the black hole's powerful tidal field, so that a star with a small mass should be swallowed whole before it can be disrupted partially. Star with a high mass could be disrupted partially before black hole swallowing it

entirely. Stars faces powerful gravitational waves and tides when passed close to the black holes. Black hole has great effects on the tidal disruptions of stars, celestial objects, and planets due to powerful distortions and curvatures in the fabric of a Universe, tidal disruptions maybe caused by dense objects such as neutron stars, and white dwarfs. Neutron stars and white dwarfs are another compacted celestial object.

STELLAR JUMPS

Stellar jumps are an astronomical phenomenon that described the stars were affected by powerful gravitational fields of Black holes, when such stars orbit black holes in much nearby region. Stars orbit the black hole with high speed and oscillations named stellar jumps. [24] Scientists were reached optimum result after 16 years of hard working and monitoring stellar orbits around the supermassive black hole in the centre of our galaxy that named a Milky Way galaxy, by using high-resolution near-infrared techniques, during accurate calculations and corrections exactly determined orbits of 28 stars, including the star named S2. Black hole is a remnant core of a high mass star or low mass star after ultimate death of stars. Black hole is a compact star; its density and gravitational field incredibly strong even light particles can't escape directly from its powerful gravitational attraction. The gravitational field of all black holes is formed from that compacted dark fabric around the black hole, even light or particles can't pass through such super distortion of a black hole by normal speed of light c, it is about 300,000 km/s in space. Dark fabric particles are so combined and distorted around the heart of a black hole that named a Singularity, even light can't break that compacted gravitational wall by a speed of light in space. Black hole is much dense and powerful object of the in the visible Universe, it has the ability to capture stars and pull inward the gas, dust particles, and electromagnetic radiations from its surrounding when materials fall down into its powerful gravitational field directly. Materials may orbit the black hole in the accretion disc with much higher speed according to the conservation law of an angular momentum, they become accreting, glow, and radiate different types of electromagnetic radiations when materials are interacting together during direct frictions and strong collisions of particles. When a Star falls into the capture of a black hole, its speed will increase incredibly, it may orbit the black hole during short period time, and it may evaporate and radiate high frequency radiations, its surface temperature will increase, and its nuclear fusion will accelerate to burn most of its fuel to save conservation law of an angular momentum. Furthermore, following the formula of an equation that used to draw the effect of black hole's movement throughout the Cosmic Dark Fabric:

$$z = \frac{\coth\,(x^2+y^2)}{\tan\,(x^2+y^2)} + \frac{1}{\cos\,(x^2+y^2)} \qquad \textbf{(9)}$$

By using MATLAB Program, and using Eqn. (9) to draw the effect of a Black hole on forming tunnel and curvatures in the fabric of a Universe. Dark fabric matter vibrated actively under the stress of black holes. suppose (-pi/2 < x < pi/2, -pi/2 < y < pi/2), or it can be written in following mathematical form: $-\frac{\pi}{2} < x < \frac{\pi}{2}, -\frac{\pi}{2} < y < \frac{\pi}{2}$.

The speed of Stars may increase rapidly to reach the speed of light or exceed it in the edge of a supergiant black hole, for this reason the internal and external temperature of stars will

increase quickly even the colours of stars will change from yellow and white colours to blue colour, blue stars are hotter types of stars. Hot plasma of stars will radiate photons with high energy, and these phenomena will show for us the real location and existence of black holes by emission of radiations from such excited stars. Stars will radiate gamma rays and x-rays when they orbit the black hole. Black hole is the great machine and accelerator of the stars in the visible Universe, because it has the capacity to attract and repulse stars, or accelerate them to incredible speed, and makes materials inside the staff of stars to collide together strongly and glow with some photons with very high frequencies. Stars may glow more and more when passed much close to the black hole region, hotter gaseous molecules, and light particles will leave from jumped stars. Star may become a blue hot star when its surface temperature increased quickly. The powerful gravitational field of the black holes and star's rapid changes in its temperature will increase stellar jumps, and its vibrations. Any celestial objects will move with high speed and oscillations when passed beside a black hole or black hole visited to them suddenly. All stars and planets have unnormal actions when they are moving close to a black hole or orbit it. Black hole will build curvatures, waves, and tunnel in the dark web during its journey throughout the fabric of a Universe. The curvatures and tunnel of a black hole will attract inward the stars, planets, and all celestial objects towards the centre of a black hole, otherwise vibrations and waves in the fabric of a Universe will push on stars and planets to be far away from the black hole. When the effect of attraction and repulsion forces on the stars and planets sustain in a balance will keep them to orbit the black hole for a long time. Star will burn most of its fuel when orbit the black hole due to its acceleration in the speed to keep itself from fall down directly into the black hole.

Black hole is a greatest accelerator, and attractor machine in the whole Universe. Star needs to burn huge amount of its fuel during fusion processes when orbits the high mass black holes, low mass black holes have lower effects on tidal disruption of stars and planets. Supermassive black holes at the centre of galaxy are acting directly on the vibration and distortions of stars and planets. The shapes of stars and planets will change urgently when orbit the black hole closely. Black holes have powerful gravitational effects on the deforming the shape and structure of stars. The surface of stars and planets may be exposed to powerful gravitational waves, tidal disruption, and distortions when moved towards to the black hole region. In fact, Stars and planets couldn't save their atmosphere from black hole's powerful pulled force, black hole will tear mass from companion stars and planets. Companion star will feed black hole from its mass and energy. Lifetime of a companion star is very short as compared to the distant stars from a black hole. Companion star will lose most of its mass and burns most of its fuel during fusion processes. Black hole companion star is the star located in the place where black hole formed here and it still main sequence star burning its fuel during nuclear fusion or developed into another shape of stars in the final stages of star's lifetime. The Fig. 1 was sketched out according to eqn. (9), clear tunnel was formed when black hole passed through the cosmic fabric matter. The stars and planets are pulled inward into the tunnel where black hole passed throughout it, otherwise the curvatures and waves in the fabric of a Universe will repulse stars and planets outwards. Stars and planets will stay in save for a long time orbit the black hole when dynamical balance between black hole and celestial objects conserved continuously.

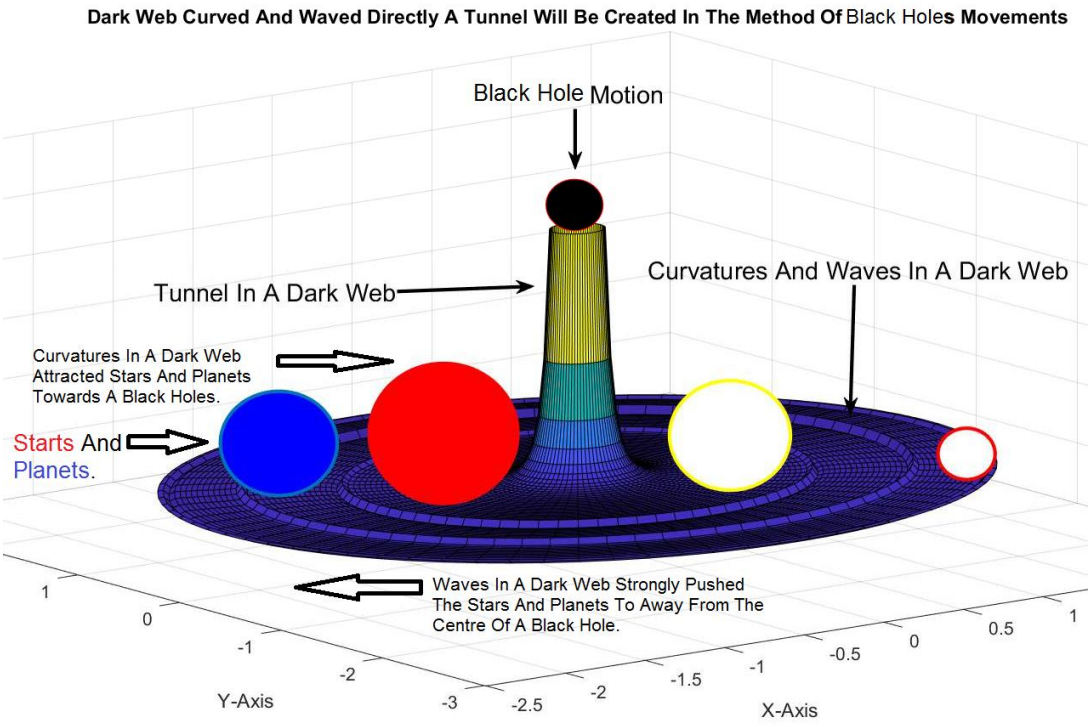


Figure 1: Black Hole Effect on The Stars and Planets Jumps

BLACK HOLE TUNNEL EFFECT

The Universe is not pure space, it is filled with dark matter particles, radiations, subatomic particles, atoms, molecules, different material compounds, gas and dust particles all together are named cosmic fabric matter and energy. The cosmic fabric matter and energy filled the space of whole Universe. [25] Black hole in its journey may build a pure tunnel in the structure of a cosmic fabric matter and energy. The nature of matter is that to recomplete all vacuums and distortions in the structure of a Universe fabric to save the general balance of a Universe. Black hole tunnel much needed to be filled with any type of matter and energy that was existed in its edge. Materials will attract actively towards to the black hole tunnel to fill it, and to save the general static and dynamical balance of a whole Universe. All celestial objects have the ability to build tunnels in the fabric of a Universe according to their masses, density, speed, and energy. The singularity of a black hole, and the black hole itself are much compacted and distorted objects in the Universe, for this reason they have the capacity to build up pure tunnels in the body of a cosmic fabric, dark matter particles were bounded and stressed together around the black hole, for this reason particles to escape from a black hole singularity are needed to additional energy and much contracted wavelengths to break its quantum tunnels throughout the fabric of a Universe.

Black hole tunnel effect is an astronomical phenomenon that occurred when a black hole passed throughout the fabric of a Universe, and pulled inward all-stars, and materials actively towards to the centre of a black hole. Stars have lower surface temperature when in distant places from

the black hole, Stars have higher surface temperature when orbit the black hole directly. The colour of stars will change to blue colour when orbit the black hole. Most stars have hotter surface temperature when fall down into the effect of black holes or orbit it closely. Blue massive stars have higher surface temperature and high frequencies of emitted radiations. Stars emitted high X-rays, Gamma rays, and UV when passed beside a black hole. Black hole can pull stars strongly, and speeding up them to orbit black hole during short time, as a result star may burn most of its fuel and evaporate its materials into space quickly. Stars will lose most of its mass during its rapid journey around the powerful black holes. High mass black holes have the capacity to rip stars very quickly and during short time. Low mass black hole may tide and rip stars for longer time. Star may lose most of its mass and fuel during short time when orbits the supermassive black holes as compared to stellar mass black holes and dwarf black holes. Star may survive for a long time when orbits stellar mass black holes and black dwarfs. Stars may orbit the black holes rapidly when the distance between the stars and black holes decreased, otherwise the star orbits the black holes slowly when passed away from black hole according to conservation law of an angular momentum. In fact, the stars will orbit the black holes quickly because the density of a dark fabric very high around the edge of black holes, and singularity. Furthermore, physically the dark fabric matter was distorted, curved, stressed, and oscillated strongly in the edge of black holes. If a star or any celestial object fall down into such violent tornado will rip and change rapidly.

Compact stars will face powerful tides and stress in the edge of black holes. Neutron star may squeeze inward entirely and being dense enough to become a black hole is a final step of a star's evolution. Black hole is gathering additional mass and energy from its surrounding to grow more and more when its singularity radius deeply squeezed inward, and its event horizon, and accretion disc are expanding outward to become a higher mass black hole that named a supermassive black hole. The supermassive black hole may grow more and more when its mass was increased after collecting additional mass from its surrounding or collided with another black holes at its journey to produce another monster of black holes that named supergiant black hole. Supergiant Black hole has the ability to swallow galaxies. White Dwarf is another type of compacted celestial object will face tight stress and tides from black holes when passed close to one another. Electron degeneracy will develop to the change main properties of white dwarfs when orbit the black hole closely. An electron degeneracy pressure of the white dwarfs and their surface temperature will increase rapidly when white dwarf orbits the black hole closely. Compacted stars are not saved from tidal disruptions of black holes as compared to another celestial objects. Tunnel or vacuum that occurred under the effect of black holes and singularity will attract all types of celestial objects and compacted stars to fall down towards to the centre of black holes and singularity to fill up that empty tunnel was occurred around a black hole singularity. Pure tunnel was formed around the black hole's singularity, because Singularity has high density, gravity, stress, pressure, and spinning around itself, materials maybe attracted, repulsed, and shifted strongly around the black hole singularity.

Tiny and powerful tornado will form around the singularity to attract and repulse materials with higher speed and angular momentum. Materials will pass an event horizon towards the centre of a black hole even fall down directly into the singularity with a speed much higher than the speed of photon particles, it is the reason to grow the black hole's singularity and become

much dense, monster, and powerful. Singularity is the great regression region of the black holes. Singularity has a perfect empty tunnel and bubble around itself, it is the reason event horizon of a black hole formed when a dark fabric matter and accretion disc distorted strongly around the black hole singularity as a result of a dense property of a singularity. Dynamical balance occurred between star and black hole when centrifugal force and gravitational force equalized, the star will orbit a black hole continuously. The star may accelerate to incredible speed and accelerating in burning its fuel, the internal and surface temperature and pressure of stars will increase incredibly, radiations have higher frequency and energy when ejected from the surface of such excited stars. Time was distorted around black hole; the star may orbit the black hole during short period time. The motion of star to high speed will spend much of its mass and energy, as a result star may lose most of its mass and energy when increased on its speed during its journey around the black hole.

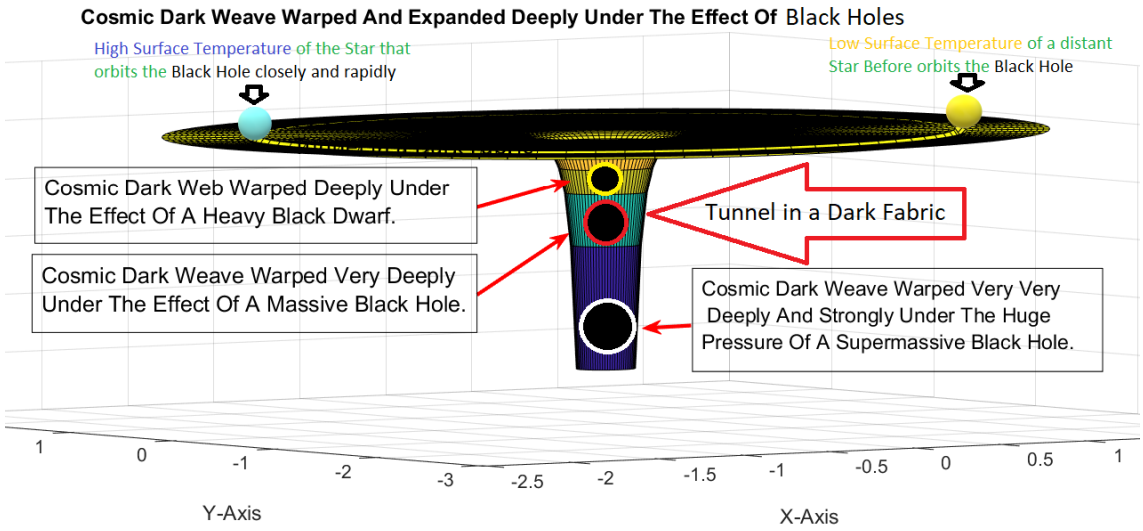


Figure 2: Black Hole Tunnel Effects on The Stellar Jumps and Temperatures

RESULTS AND DISCUSSION

Solar mass star is an average star. Its mass equals to 2 x 10^{30} kg and radius 700,000 km. Black dwarf formed from solar mass stars with the mass about 2 x 10^{30} kg, according to eqn. (8) the tidal disruptions radius (R_t) of a solar mass star around black dwarf exactly around 700,000 km. Sirius A is one of the brightest stars in the Milky way galaxy, it is 8.60 light-years or 2.64 parsecs away from the Earth. Sirius A one of massive stars and its density about 563 kg/m^3, its surface temperature 9,950 kelvins, its radius 1.19 million kilometers, its tidal disruption radius about 2434075876 m when orbits stellar mass black hole with the mass 20 x 10^{30} kg, its luminosity about 25.3 L⊙, and its life time much shorter than life time of a solar mass stars. White dwarf is a remnant core of a planetary nebula, its mass about 2.025 x 10^{30} kg, its radius 5844 km, and its tidal disruptions radius about 581985093.7 m when orbits the black hole with a mass around million times the mass of a Sun. Tidal disruptions radius around 6.99 x 10^{10} m, if a solar mass star orbits the black hole with a mass million times the mass of a Sun. Red giant has a lower density, pressure, and surface temperature, but its radius 100 times the radius of a Sun, and its tidal disruptions radius about 1.11 x 10^{13} m when orbits the supermassive black

hole with mass 4 million times the mass of a Sun. Tidal disruptions radius of the Solar mass star about 2.58 x 10^{12} m when orbits the supermassive black hole with a mass 50 billion times the mass of a Sun.

The luminosity of high mass stars much bigger than the luminosity of low mass stars according to eqn. (4), because high mass stars have higher mass, core pressure, surface temperature, and radius as compared to a low mass star. Life time of a low mass stars much longer than the life time of a high mass stars according to eqn. (7), because the low mass stars have lower mass, core pressure, and core temperature, as compared to high mass stars. High mass star is burning most of its fuel during short time and exploding with a big explosion that named a supernova. Materials in the structure of our body, planets, and most celestial objects were come from remnants of supernova explosion when supergiant star was exploded in the final stages of its life time. The planets, satellites, meteors, and all living creatures were formed from remnant of stars. Materials were spreading and distributed into space after big explosion of high mass stars. Low mass stars will expand outward to become a red giant and planetary nebule in final stages of its lifespan. High mass stars are feeding our body and planets with different types of materials, but low mass stars like the Sun is the reason of an our exist and living on normal planet the Earth for a long time ago. The Sun is feeding all living creatures and plants on the Earth planet with generous energy. The life without the existence of low mass stars, and high mass stars is impossible in the Universe.

Supergiant star is a high mass Star, its mass is very high may burns its fuel very quickly to produce new heavy atoms, and release into space huge amount of energy, and plasma from nuclear fusion processes that occurred at the centre of all massive stars. All main sequence stars may die and expand to become a red supergiant when their fuel of fusion exhausted exactly at the final stages of a star's lifetime. Star may die and evaporate rapidly when orbits the black holes, especially high mass black hole that named a Supermassive black hole. Black hole is a much greater potential energy that ceased in the tiny point inside the fabric of a Universe. Neutron stars and white dwarfs have shorter tidal disruption radius as compared to the tidal disruption radius of stars and planets. Stars and planets have lower density and bigger radius, neutron stars and white dwarfs have higher density and smaller radius. All of stars, planets, and compacted stars have different tidal disruption radius when passed around the black hole, and effected by its powerful tidal force. The surface temperature of stars will change from yellow colour to blue colour when orbits the black hole, stars will be vibrated by powerful disruptions of black holes, spikes and spicules of hot ejected plasma maybe shown clearly on the surface of that star which named the spiky star. Stars look like spiky in the images collected by JWST and Hubble Space Telescope due light diffractions, Diffraction spikes are lines radiating from bright light sources, causing what is known as the starburst effect in photographs. [26] It has been suggested for a long time that dark matter could form a density spike around a black hole, dark matter density spikes around each of the two nearby stellar-mass black holes (A0620-00 and XTE J1118+480) had been discussed. Star has spherical shape, but it has spikes due to diffracted light around itself.

Table 1: Tidal Disruption Radius of the Stars orbit the Black holes

Black Hole Mass M_{bh}	Mass of Stars M_*	Radius of Stars R_*	The Tidal disruption radius $R_t=R_* (\frac{Mbh}{M_*})^{1/3}$
2 x 10^{30} kg	$2\ x\ 10^{30}$ kg	700,000,000 m	700,000,000 m
20 x 10^{30} kg	$2.34\ x\ 10^{30}$ kg	1190500000 m	2434075876 m
2 x 10^{36} kg	2.025 x 10^{30} kg	5,844,000 m	581985093.7 m
2 x 10^{36} kg	$2\ x\ 10^{30}$ kg	700,000,000 m	6.99 x 10^{10} m
8 x 10^{36} kg	$2\ x\ 10^{30}$ kg	70,000,000,000 m	1.11 x 10^{13} m
1 x 10^{41} kg	$2\ x\ 10^{30}$	700,000,000 m	2.58 x 10^{12} m

CONCLUSION

Life cycle of a high mass stars, and low mass stars had been explained in detail, both of stars were born from great stellar nebula as a protostar that formed in the first stages of a star's formation, and it may die in the final stages of a star's evolution when it becomes a red giant or red supergiant, supernova, white dwarf, Neutron star, or black hole after star's death in the final moment of a star's lifetime. The Universe is filled with a low mass and high mass stars, both of Sirius A and Rigel are two high mass stars and much luminous stars in the night sky. Lifespan of a high mass star much shorter than low mass stars. Black hole was formed during ultimate death of a low mass stars or high mass stars according to their masses and energy of explosion. Black hole is making a tunnel in the fabric of a Universe when moved throughout it, the tunnel that formed in the fabric of a Universe will attract and repulse neighbourhood stars and planets, as a result tidal disruption of stars was caused by Black holes. Singularity has a tiny radius, high density, deeply squeezed inward, its event horizon, and accretion disc are expanding outward slightly because of a fabric surface tension. Surface tension properties of a water or liquid surface displayed by its acting as if it was a stretched elastic membrane, Surface tension is what allows objects with a lower density than water such as razor blades, Tree leaves, dried plant, and insects to float on a water surface without becoming even partly or totally submerged into water and liquids. The molecules in a water drop will attract each other weakly, surface molecules could be displaced slightly outward from the surface under any stress or gravitational pull, they would be attracted back by the nearby molecules. Cosmic fabric matter and energy has the same properties of solids, liquids, and gaseous molecules. Cosmic fabric matter could be distorted and vibrated under the effect of celestial objects when interacted with it. The supermassive black hole has higher distortion effects in the fabric of a Universe, and bigger tidal disruptions radius. Stars, planets, and all celestial objects are tidally disrupted strongly by black hole's powerful gravitational field.

ACKNOWLEDGEMENTS

I would like to thank my family for their continuous support to my work, and deeply thanks to my close friends.

Conflict of Interest

Authors declare that they have no conflict of interests.

Funding: This study was funded by myself.33

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