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Distortion and Heating an Accretion Disc of a Black Hole

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ABSTRACT: In the present work, several mysteries of a black hole, including its spinning speed, frequency, angular momentum, and rotational kinetic energy, could be addressed. Indeed, the radius, density, surface temperature, thermal energy, and rotational speed of a black hole singularity and the accretion disc may be increased and decreased rapidly according to the conservation law of angular momentum and energy. The transitional and rotational kinetic energy of particles in an accretion disc of a black hole is thermalized. The Nuclear fusion ball has been squeezed steeply due to the higher pressure of a black hole to produce a new superparticle. The Gas and dust particles are capable of spinning up quickly to orbit the black hole at a huge speed and momentum. An accretion disc of a black hole could be distorted and heated up by the black hole singularity, superparticles, and celestial objects. The Powerful gravitational waves of a black hole singularity propagated through an event horizon and an accretion disc of a black hole to make ripples. The turbulent superparticles can travel through the event horizon and accretion disc of a black hole to ripple, and tear apart the gas and dust particles or make powerful black hole jets due to their motion throughout a black hole's accretion disc. Celestial objects are mostly responsible for the tidal disruptions of a black hole. The radius of a black hole singularity had been compressed and reduced to the size of an atom due to its mass and gravitational pressure. Otherwise, the thermal energy and superparticle degeneracy pressure would suspend the distortion and reduction of a singularity ball. The hydrostatic balance of a black hole singularity protected it from any further collapsing and evaporation.

KEYWORDS: Accretion Disc; Superparticles; Singularity; Celestial Objects; Spinning Speed; Rotational Kinetic Energy.

1. INTRODUCTION

A black hole is a condensed ball of matter and energy that is distorted steeply around a dense sphere of singularity which located at the heart of a black hole. Astronomers divide black holes into five categories according to their masses and event horizon radius, such as tiny mass black holes, black dwarfs, stellar-mass black holes, supermassive black holes, and Supergiant black holes. The concept of an accretion disc of a black hole has been developed and its models can be divided into hot and cold types based on its temperature [1]. A tiny mass black hole or primordial black hole is the weirdest and smallest kind of a black hole, it may have formed after the Big Bang era or due to an escaped superparticle. The mass of low-mass black holes should be similar to the mass of planets, mountains, asteroids, rocks, molecules and atoms. The radius of tiny black holes is less than a meter, centimetres, micrometres, picometers and femto-meter. A black dwarf is a low-mass black hole that formed from the ultimate death and furthered collapses of a solar-mass star at the final steps of its life. The radius of a solar mass black hole could be 3 kilometers. The stellar mass black hole is a high mass black hole which formed from collapsed core of a high mass star when fusion fuel of such star exhausted entirely. The radius of a high mass black hole exceeded to 5 kilometers. Black hole has the capacity to collect additional mass from its surrounding to grow rapidly and produce new largest and massive type of a black hole called supermassive black hole. The mass of a supermassive black hole exceeded the mass of millions of Suns and stars, and its radius could be lower or larger than the radius of a solar system. The Event Horizon Telescope (EHT) recently captured for the first time the direct image of the supermassive black hole in heart of a galaxy M87 [2]. The galaxy has a black hole at its core [3]. Supergiant black hole is a largest sort of black holes, its radius exceeded a light year to 20 or thousands or millions of light years. The mass of a supergiant black hole maybe higher than the mass of a galaxy, galaxy clusters, and whole visible universe. The mass, radius, accretion disc, and event horizon of a supergiant black hole are extremely higher than any other black holes. The mass of a supergiant black hole exceeded the mass of a Milky way galaxy 100 times or millions of times [4]. The superparticles with a mass of stars could be produced inside such larger type of black holes. Supergiant black hole has a larger event horizon to produce superparticles and accelerate them to a speed of light or higher than the speed of light particles in space.

The main objectives of this study are to calculate the Tangential Velocity $\boldsymbol{v}$, Frequency $\boldsymbol{f}$, and Rotational kinetic energy of a rapidly spinning black hole singularity.

2. ACCRETION DISC OF A BLACK HOLE

An accretion disc is a thin ring of hotter plasma that surrounds the Black Hole at its external edge. The accretion

disc could be 10% of the total radius of a black hole. An event horizon represents about 90% of the entire radius of a black hole. The accretion disc is only a thinner ring of hot and energetic plasma particles which orbits the black hole sphere, at its external edge. According to Einstein's predictions in the general theory of relativity and Kerr's rotating black hole the light particles are Twisting around rotating massive astrophysical objects [5]. The Low mass black hole that formed from ultimate death of a solar mass star, and stellar mass black hole which born from collapsed heart of a high mass star. The dwarf black holes and stellar mass black holes have lower event horizon radius and limited accretion disc [6,7,8]. The imaging of Sagittarius A* (Sgr A*) at the center of a Milky Way Galaxy, and the supermassive black hole at the center of Messier 87 (M87*) by the Event Horizon Telescope has confirmed the location, reality, existence, and nature of emissions from these fantastic objects [9,10,11]. The singularity is a dense ball of a squeezed state of matter and energy available at the heart of all types of black holes. The mass and density of a singularity resident at the center of a low-mass black hole are lower than those of a singularity located at the core of high-mass black holes. The black hole singularity has a powerful tidal force capable of tearing apart the celestial objects and stars that pass beside it in a dangerous zone. Black holes can tear a fraction or total amount of matter from stars that orbit them. A black hole has powerful tidal and gravitational forces that may accelerate celestial object which orbits them closely because the gravitational tunnel waves of a black hole singularity have high frequency and energy capable of shaking and heating stars and planets in distant places from it. The surface heating and interior temperature of cosmic objects will increase rapidly because of the powerful tidal and gravitational force of a black hole that acting directly in the heating of an accretion disc.

In fact, the interior energy and temperature of stars maybe increased which led to accelerated fusion processes of stars. The fast-burning fuel of stars, it means the short lifetime of stars. The Interior and surface temperature of Stars and cosmic objects will increase violently, that lead to evaporate some mass or total amount of mass from such stars and celestial objects that available in the border of a black hole. Fraction and entire mass of stars could be evaporated under tidal disruption effect of a black hole, as a result an evaporated amount of matter will fall down rapidly into the capture of a black hole. Black hole will grow quickly after gathering high enough amount of matter from celestial objects. Black hole has powerful attraction and repulsion force, as a result Gas and Dust particles can orbit the black hole in its edge at the region called accretion disc. The optical caustic structure of hot plasma particles around rotating black holes causes rapid X-ray variability in active galactic nuclei (AGNs) [12]. A photon ring results from light rays that has been curved steeply and orbit around the low mass and high mass types of black holes [13]. The supermassive black hole at the center of M87 exhibits a powerful radio jet, allowing one to study jet-formation physics on horizon scales [14]. Tremendous amount of matter could be evaporated from stars, and fall down towards the surface of a black hole to bombard it and feed it. The gravitational energy of an evaporated star will convert into kinetic energy and thermal energy after rapid collision with an external surface of black hole sphere. Black hole can't suck in at once total matter which dropped into the black hole, because black hole has powerful gravitational tunnel waves that lead to attract and repulse objects, and keep them in the location nearby itself according to density, state, speed, momentum, and energy of that matter. Materials in the accretion disc capable of orbiting the black hole singularity with high speed and momentum. The speed of particles could be increased, and the probability of friction and collision among dust and gas particles inside an accretion disc may increase rapidly, as a result the temperature, rotational energy, angular momentum, and thermal energy of materials inside an accretion disc could be increased enormously.

3. BLACK HOLE SPHERE

A black hole sphere is a spherical ball of condensed matter and energy. The Singularity is a tiny, and smooth ball of strongly compacted state of matter and energy which located at the black hole's core. Black hole singularity has huge mass and density, as a result, it is immersed deeply into the heart of a black hole. The size of a black hole could be increased or decreased. The black hole sphere is an unstable ball of matter and energy, it could be squeezed and stretched continuously to attract and repulse materials in an accretion disc of a black hole, and release energy. Powerful and energetic TeV photons from the center of M87 have been detected, and offer a new clue to the constraints of the spins of supermassive black holes (SMBHs) [15]. The Size of a black hole is changeable dynamically because the heart of a black hole contains a powerful rotational black hole singularity. The black hole singularity orbits itself with a tangential speed similar to the speed of light or exceeds its speed. A black hole's rotational energy and kinetic energy will press on an event horizon and accretion disc of a black hole to squeeze inward and stretch outward actively, and continuously. The materials in an accretion disc of a black hole may face the powerful tidal force of a singularity, as a result, the probability of concentration, friction, and collisions among gas and dust particles increases to produce energetic particles, and photon particles with higher photon energy. The supermassive black hole at the center of M87 has a powerful jet of energetic particles, which is analysed in the X-ray cavity [16,17,18, 19, 20, 21]. The density, size, radius, gravitational acceleration, thermal energy, internal energy, temperature, momentum, and rotational energy of entire black holes could be changeable instantly. Gravitational acceleration **g** of an object with mass **m** falls down freely without any resistance on an external surface of an object with mass **M** as shown as below:

$$F = mg \quad (1)$$

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

$$W = Fd \quad (3)$$

$$P = \frac{F}{A} \quad (4)$$

$$V = Ad = \frac{4}{3}\pi r^3 \quad (5)$$

$$A = 4\pi r^2 \quad (6)$$

Rewrite and arrange eqn. (3), eqn. (4) and eqn. (5) yield to:

$$W = Fd\left(\frac{A}{A}\right) = \frac{F}{A}Ad = \int_{V_i}^{V_f} PdV = P(V_f - V_i) \quad (7)$$

Where, **W** is a work done, **F** is a force**, d** is a displacement, **P** is a pressure, **A** is surface area of an object, **V** is the volume of an object, **r** is the radius of spherical or circular object, and **G** is a Gravitational Constant, it is constant in any place in the Universe, **G = 6.673 x 10^{-11} N m^2/kg^2**. By using eqn. (2) to calculate the gravitational acceleration of an object with mass **m** that falls down on the surface of a stellar mass singularity with mass 8 times the mass of a Sun ($M = 8\ x\ 2\ x\ 10^{30}\ Kg$) and its radius equal to the radius of a hydrogen Atom or Bohr radius ($r = 5.3\ x\ 10^{-11}\ m$), the gravitational acceleration extremely high about ($g = 3.8\ x\ 10^{41}\ m/s^2$). The Potential energy and kinetic energy of an object that falls down rapidly in the edge or on surface of a black hole singularity high enough to be a super particle. Superparticles have powerful energy and momentum to travel inside the event horizon of a black hole rapidly, they can fall directly into the heart of a black hole and collide with a singularity, and their potential energy will convert into powerful turbulences, rotational energy, internal energy, and thermal energy. The black hole singularity has powerful rotational energy and transitional kinetic energy. The spinning speed and total energy of a black hole singularity could be increased and decreased during the bombardment of its external surface by superparticles. The increment and decrement in the spinning speed and rotational energy of a black hole singularity may lead to an increase and decrease in the size and pressure of a black hole sphere, accretion disc radius, and its temperature. A superparticle is an energetic particle that can collide with a black hole singularity to feed it or pass beside it to become a singularity for the newborn black hole. The survived superparticle has enough mass, density, energy, and momentum to become a dense ball of singularity.

4. ROTATIONAL AND TRANSITIONAL KINETIC ENERGY

The rotational energy or Rotational kinetic energy is the kinetic energy due to the rotation of an object, typically spherical and circular objects [22]. The rolling objects have both rotational and translational kinetic energy. A black hole singularity is a spherical ball of condensed matter which stabilized at the heart of a black hole sphere, it has a tiny radius and powerful rotational and the transitional kinetic energy. The rotational energy or spinning kinetic energy of a black hole singularity or an accretion disc is the kinetic energy due to the rapid rotation of a singularity ball or plasma ring of an accretion disc, and it is part of its total kinetic energy. To get the total work done **W** by an internal pressure **P** of a black hole singularity due to its rapid rotation that leads to increase the volume of a black hole **V** from an initial volume (V_i) to the final volume (V_f)**,** for example **r** is the radius and **V** is the volume of a black hole sphere that changed dynamically during total pressure on the entire size of a black hole, the pressure **P** is integrated with respect to variable volume **dV** of a black hole according to eqn. (7). Black hole singularity is a white and smooth ball of squeezed type of matter and energy that combined together at the point similarly the size of an atom or subatomic particles, it is rotating quickly about its axis with a speed similarly or larger than the speed of light. When an object is rotating about an axis, its **rotational kinetic energy** is $KE_R = \frac{1}{2}Iw^2$**. The Rotational kinetic energy** = ½ moment of **inertia** * (angular speed)^2. The Kinetic energy is directly proportional to the mass of the object and to the square of its velocity. Heat energy is another name for thermal energy of rapid oscillated particles. The Kinetic energy is the energy of a moving object that produces thermal energy during its rotational or transitional kinetic energy. The thermal energy comes from moving particles in circular or in linear path, it is a form of kinetic energy. Thermal energy of a black hole singularity increased quickly when bombarded by superparticles. The rotational energy and transitional kinetic energy of a superparticle may convert into internal energy and thermal energy due to direct collision with a singularity. An orbital kinetic energy of the gas and dust particles in the accretion disc of a black hole has been thermalized since particles are orbiting the black hole at its external edge rapidly. Following main equations of rotational and transitional kinetic energy, tangential velocity, moment of inertia for rigid sphere and rings, and Thermal energy that comes from a substance, and object which molecules and atoms are vibrating faster due to a rise or increase in temperature:

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

$$KE_R = \frac{1}{2}Iw^2 \quad (9)$$

$$v = r\,w \quad (10)$$

$$I_{Solid\ Sphere} = \frac{2}{5}mr^2 \quad (11)$$

$$I_{ring} = mr^2 \quad (12)$$

$$KE_T = \frac{3}{2}K\,T \quad (13)$$

$$U = \frac{3}{2}nR\,T \quad (14)$$

$$PV = nR\,T \quad (15)$$

$$Q = mC(T_f - T_i) \quad (16)$$

$$\Delta U = \Delta Q - W \quad (17)$$

$$\Delta U = \Delta Q - PdV \quad (18)$$

$$GPE = mgh \quad (19)$$

$$v = \frac{(N_{revolution} * 2\pi r)}{t} = 2\pi r f \quad (20)$$

$$\rho = \frac{m}{\frac{4}{3}\pi r^3} \quad (21)$$

$$v = \sqrt{\frac{Gm}{r}} \quad (22)$$

Where, ρ is a density**,** **GPE** is a gravitational potential energy when an object with clear mass **m**, gravitational acceleration g at distance **h** from the surface of a singularity falls urgently on it to increase its temperature, internal energy, thermal energy, kinetic energy, rotational energy, pressure, volume, and momentum. The energy and momentum of a black hole singularity could be distributed through the fabric of a black hole in the event horizon zone to increase the energy, momentum, and temperature of total materials in an accretion disc of a black hole. KE_T is the transitional kinetic energy, KE_R is the rotational kinetic energy, **U** is an internal energy and it is the sum of translational kinetic energy of atoms. **P** is a pressure in Pascals, **V** volume in m^3, **n** is the number of moles of gas (mol), **R** is a gas constant (8.31 J/Kelvin.mol), typically ideal gas. Furthermore, **m** is the mass of a rolling object, v is the tangential velocity of objects, I is the moment of inertia, w is angular momentum of a rotated object. $N_{revolution}$ is the number of revolutions or spinning of an object per time period **t**, and f is the frequency of circular motion or the number of revolutions of an object per second. Also, T is the temperature of hot particles and objects in (Kelvin), K is the Boltzmann constant is defined to be exactly **1.380649×10^{-23} joules per kelvin**. The Boltzmann constant is the proportionality factor that relates the average relative thermal energy of vibrated particles in a gas with the thermodynamic temperature of the gaseous molecules. **Q** is the amount of heat transferred, **m** is the mass of the object and hot gas, **C** is the specific heat capacity of materials, every type of matter has its particular specific heat capacity, and **ΔT** is the rapid change in the value of temperature of a system. Eventually, **ΔU** is the rapid change in value of an internal energy of a system due to heat added to the system **ΔQ** and work done by the system W. The value of **Q** changed due to increment and decrement the entire temperature of a system. The internal energy of a black hole is changeable due to the variable temperature of its temperature. Black hole singularity could be bombarded by superparticles that lead to an increase its temperature, thermal energy, momentum, kinetic energy, and rotational energy. The rotational energy and kinetic energy of a black hole singularity may convert into kinetic energy and thermal energy for materials, gas, and dust particles in the accretion disc of a black hole. Rotational energy and thermal energy of a rotated singularity may come out from the deep heart of a black hole as powerful gravitational tunnel waves and electromagnetic through the compacted fabric of a black hole. Gravitational tunnel waves or singularity tunnel waves may cause rapid oscillations of fabriton particles and total black hole particles that are distributed at the event horizon of a black hole and its accretion disc. The total energy of a black hole singularity spreads out from the deep heart of a black hole as powerful gravitational tunnel waves and thermal energy act directly on distortion and heating atoms and particles in the accretion disc.

5. SINGULARITY ROTATION

A singularity is a dense ball of squeezed matter and energy in nature. It has a mass of atoms, rocks, planets, stars, galaxies, and the universe, but its size is similar to the volume of atoms or subatomic particles according to its spinning speed, and angular momentum. The singularity has tremendous spinning speed to keep its size small and keeps it condensation according to the conservation law of energy and momentum. A neutron star has huge mass, density, electromagnetic field, and gravity, but its radius is squeezed to only 10 kilometers according to the conservation law of angular momentum. The neutron star's mass could be 1.5 times the mass of the Sun, but its radius is only 10 or 20 kilometers. The mass of neutron stars should be 3 or 10 times the mass of the Sun according to the mass of collapsed stars. The Spinning speed, rotational energy, and angular momentum are carried by entire elementary particles, and atomic nuclei [23]. An electron particle orbits the nuclei of an atom about 7 quadrillion revolutions per second or equivalently to 7 thousand trillion revolutions per second. An electron particle orbits the nucleus of an atom with a speed lower than the speed of light, it capable of orbiting the nuclei of an atom ($f = 7x10^{15}\ Hz$), it is the frequency of an electron revolving in the first orbit of Hydrogen-atom. An electron particle in an atom revolves around the nucleus in an orbit of a Bohr radius 0.53 Angstrom. The spinning speed of an electron particle is lower than the speed of light in the outer shells of an atom due to lower electromagnetic force and gravitational tunnel waves in the fabric of an atom.

The black hole singularity could be faced to two types of pressures are gravitational pressure from its mass and thermal pressure from its radiations. The black hole singularity is surrounded from outside by an accretion disc, superparticles, and fabriton particles, which are whole together pushing the singularity to contract. The photon particles have limited opportunity to escape from a singularity, the thermal pressure of radiation has been increased widely around the singularity leading to an increase in the size of a singularity. The balance between the thermal pressure of photon particles and gravity protected the whole black hole singularity from annihilation. The thermal energy of a black hole singularity is capable of increasing the spinning speed of a singularity to a speed higher than the speed of light, as a result, the radius of a singularity is similar to the radius of an atom or particles.

The density of a neutron star is lower than the density of a black hole singularity, and the escape velocity from an external surface of a neutron star could be smaller than the speed of light. The black hole singularity has huge

density and spinning speed, and it has a tiny radius according to the conservation law of angular momentum. An escape velocity from an external surface of a black hole singularity exceeded the speed of light. The tangential velocity and angular velocity of a black hole singularity same as the speed of light or exceeded it according to the conservation law of angular momentum. The radius of a singularity ball squeezed to the size of an atom or subatomic particles but its tangential velocity and rotational energy increased rapidly to keep it much stable and dense as a whole [24]. The radius of a black hole singularity with a solar mass same as the Bohr radius ($r = 5.3\,x\,10^{-11}\,m$), and its tangential velocity maybe similarly the speed of light ($v = c = 3x\,10^{8}\,m$), its frequency or its revolutions per second should be ($f = 9\,x\,10^{17}\,Hz$) according to eqn. (20). The singularity ball revolves itself faster than neutron stars and electron particles. The neutron star revolves itself 700 times per second or a frequency of about 700 Hz. The black hole singularity with a mass of Sun, Hydrogen radius, and its tangential velocity same as the speed of light, its rotational kinetic energy is high enough to keep itself from evaporation, it is about ($KE_{rotation} = 3.6\,x\,10^{46}\,J$) according to eqn. (9), eqn. (10), and eqn. (11). The black hole singularity is a rigid ball of compacted matter and energy according to eqn. (11). The density of a rigid sphere of a black hole singularity is incredibly high even super particles cannot pass near its surface easily. Black hole singularity has been stabilized at the deep heart of a black hole due to its huge spinning speed, rotational energy, momentum, and density. An effect of a rotational kinetic energy and transitional kinetic energy of a black hole singularity come out strongly from the deep heart of a black hole and propagate violently through the event horizon and accretion disc of a black hole as turbulences that lead to squeeze and stretch an entire volume of a black hole continuously. An accretion disc and event horizon zone of a black hole could be compressed and expanded steeply during rapid propagation of powerful singularity tunnel waves that are produced from rapid rotation, transition, and oscillation of a black hole singularity in the heart of a black hole. Singularity tunnel waves can distort and heat materials in the accretion disc of a black hole. Black hole is a turbulent ball of squeezed and stretched type of matter and energy. The black hole singularity capable of making tunnels and turbulences in the heart of a black hole due to its rapid spinning, powerful rotational energy, and giant density effects. The black hole singularity can make a tunnel vacuum in the distorted fabric of a black hole to attract objects inward and collect the amount of mass from its surroundings by an attraction force called the Tunnel Attraction Force, otherwise, it repels outward event horizon, objects, and materials in the accretion disc by powerful gravitational waves that named Tunnel Repulsion Force of a black hole singularity.

5.1 Tunnel Attraction Force

Black hole singularity has powerful spinning speed, angular momentum, rotational energy, and thermal energy that lead to make a pure tunnel in the compacted fabric of a black hole. The distance among fabriton particles may be similar to the Planck length or fabriton radius in the inner shell of the event horizon. Fabriton particles are distorted and combined steeply around dense ball of singularity. The density of a singularity ball is higher than that of any object in nature, as a result, dark fabric matter and energy of fabriton particles could be distorted strongly around the singularity. The distorted fabric of matter and energy shields the singularity, and a huge number of photon particles have accumulated between the external surface of the singularity ball and the internal surface of an event horizon shell. The mass of a singularity ball is variable or maybe same as the mass of atoms, rocks, mountains, asteroids, planets, stars, galaxies and visible universe, but its size similarly the volume of an atom or subatomic particles. The mass and density of a black hole singularity increased due to collecting additional mass and energy from its surroundings. Superparticles are a powerful type of particles that have been created under high conditions inside an event horizon of dense objects, typically black holes. A super particle is a powerful type of particle that can fall directly into the heart of a black hole and collide with a singularity to feed it and be its additional fuel and energy.

The distance between singularity and internal shell of an event horizon could be very small as radius of a singularity, but such tiny vacuum in the tunnel is strongly required to huge amount of mass which similarly the mass of a black hole singularity or twice it to fill up it extremely, as a result black hole singularity may attract and collect additional mass and materials from its surrounding continuously to grow rapidly. The black hole singularity could be bombarded by powerful particles that called superparticles or black hole superparticles. The black hole singularity capable of attracting gas and dust particles in the accretion disc to fall into the heart of a black hole by a force called Tunnel Attraction Force. The gravity is the tunnel vacuum that appeared around the low mass object or high mass object which able to suck in some other objects or mass from its surrounding. The tunnel attraction force depends on the mass, and density of celestial objects. The mass of earth higher than the mass of Moon, as a result its gravity higher than the gravitational force of a Moon. The mass of Sun higher than the mass of planets, as a result its gravitational force incredibly high as compared to planets. The density of a neutron stars is higher than the density of white dwarf stars, as a result its gravitational force much stronger than the white dwarf stars. Furthermore, the density of a black hole singularity higher than the density of subatomic particles, neutron stars, white dwarfs, planets, and stars, as a result an escape velocity from an external surface of a singularity ball exceeded the speed of light thousands or trillion of times. The black hole singularity has pure tunnel vacuum and steeply distorted shell of an event horizon around itself, as a result the attraction force around the singularity exceeded the speed of photon particles. The tunnel vacuum that produced around the

singularity ball is the source of powerful attraction force for entire black holes. The tunnel vacuum has small size, but it needs the mass similarly the mass of its own singularity to fill up. Unfortunately, the tunnel vacuum that appeared around the black hole singularity can't be filled up by tiny or huge amount of mass, because the powerful attraction force and thermal energy of a singularity will attract and destroy any objects instantly. The opportunity for superparticles to pass successfully beside the singularity surface is very low. The survived super particle from collision and annihilation when passed through the tunnel vacuum around the singularity ball may become a singularity for newborn black hole. The attraction and repulsion forces of a black hole singularity act directly on the distorting and heating of an accretion disc of a black hole. The low-mass black hole has a shorter event horizon radius, and its singularity acts strongly on the accreting and heating of an accretion disc. The singularity tunnel waves and thermal energy of a low-mass black hole are capable of being distributed at a fraction of time through an event horizon and heating an accretion disc to billions of kelvins. Gas and dust particles orbit the low-mass black holes with a speed higher than the speed of light and their temperature increases rapidly to millions or billions of kelvins. Gas and dust particles emit a blue colour of radiation such as Cherenkov light in the accretion disc of black holes with two- or three-meter radius. Cherenkov radiation is a powerful form of energy that we can see as a blue glow emitted from nuclear reactors due to nuclear reactions when the electrically charged particles that compose atoms such as electrons, neutrons, and protons are moving at speeds faster than that of light in a specific medium and water in the core of nuclear reactor [25, 26, 27]. The temperature reaches millions of degrees inside the nuclear reactors and the hot ball of plasma due to an exploded nuclear bomb, typically the hydrogen bombs.

5.2 Tunnel Repulsion Force

The tunnel repulsion force is a tiny tunnel that formed around the singularity to expel the event horizon and accretion disc of a black hole as a powerful repulsion force. Black hole singularity has huge density and powerful gravitational waves to warp and vibrate the compacted fabric of a black hole. An event horizon and accretion disc could be distorted and a tiny tunnel vacuum has been produced around the rotated singularity. The singularity has a tiny radius, powerful spinning speed, and energy according to the conservation law of angular momentum. The singularity spins up and down rapidly and releases its giant energy as gravitational waves through the compacted fabric of the event horizon and accretion disc. The rotational energy and momentum of a singularity may build up the tunnel in the heart of a black hole and push out an event horizon, this phenomenon is named Tunnel Repulsion Force. The tunnel vacuum has been formed due to enormous density, momentum, and rotational energy of a singularity. The tunnel that produced in the heart of a black hole has a fantastic role, and precisely acting directly on the attraction and repulsion of objects in the edge of a singularity. The tunnel repulsion force is a force that appeared as gravitational waves that come out from deep heart of a black hole. The Earth has a tunnel repulsion force and tunnel attraction force that repels and attract Moon at distance 385,000 kilometers. The Sun is a huge ball of plasma, it has the capacity to build up tunnel in the fabric of cosmos. The Sun has tunnel attraction force and tunnel repulsion force that acting directly on the attraction and repulsion of total planets, asteroids, satellites, comets, and dust particles inside and outside the solar system. The protons and neutrons in the heart of an atom could be vibrated urgently and capable of making tunnel in the core of an atom to attract and repulse electrons and fabriton particles in the edge of an atom. Protons and neutrons have powerful rotational energy and momentum that spread out through an atomic fabric as gravitational waves. The atoms, planetary system, stellar system, galaxy and entire visible universe capable of making tunnels and gravitational waves in the fabric of Universe. Tiny particles and galaxy cluster are holding together and repulse one other through an entire history of Universe formation. We are living in the wonderful and cohesive fabric of universe. The universe is a fantastic and homogeneous system. The universe holds itself from evaporation due to formation the accurate tunnels and gravitational waves which appeared in the fabric of cosmos. The transition of celestial objects in the fabric of cosmos may produce tunnels, and gravitational waves which named gravitational tunnel waves. Dark fabric matter and energy had been distorted by an ordinary matter, celestial objects, atoms, and black holes [28]. The full moon tides ocean waters by its effect of gravitational tunnel waves. The Moon capable of making tunnel and waves in the dark fabric matter, the tunnel and gravitational waves that produced under mass and pressure of moon may attract and repulse the water in the sea and oceans that surrounded the Earth's planet. The Moon has powerful tidal force, typically due to full moon time. The tidal force of a singularity has distorted the event horizon and accretion disc of a black hole steeply. The black hole singularity is a dense and white ball of squeezed matter. It has powerful rotational energy to accrete, collect, accelerate, and heat the gas, dust particles, and superparticles in the event horizon and accretion disc. The gas and dust particles in the nearest point of singularity are hotter, luminous, and more energetic because they are exposed to the stronger tidal force of a black hole and the powerful gravitational waves of a black hole singularity.

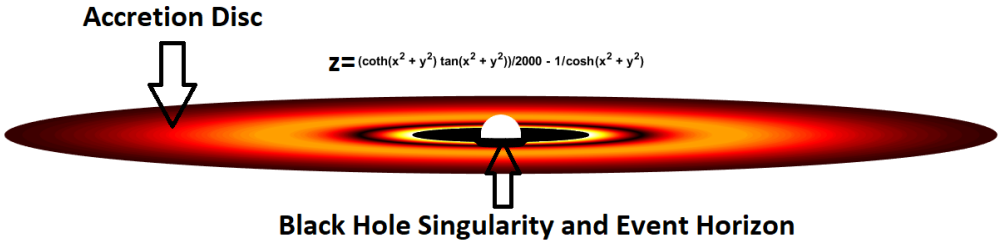

Fig. 1. An Event Horizon and Accretion Disc Distorted by a Black Hole Singularity

6. SUPERPARTICLES EFFECT

A superparticle is a dense object formed from a remnant core of a nuclear fusion ball that falls from the accretion disc to swim against the singularity tunnel waves towards the heart of a black hole and gives birth to a new dense particle in nature named the super particle. The superparticle has a tiny radius, huge mass, density, energy, angular momentum, thermal energy, and kinetic energy to travel rapidly into the deep heart of a black hole and collide strongly with a singularity. The superparticle is the only particle that has been found in nature that can pass through a stronger potential barrier of a black hole and collide with a singularity ball to feed it with additional mass and momentum. The black hole has a strongest gravitational wall that surrounding an entire surface of a singularity ball. An event horizon shields the singularity ball steeply, as a result, we can't see the external surface of it easily or detect it by any new technology at this moment. It is possible to detect a black hole singularity due rapid collision of super particles with its external surface. The singularity tunnel waves that propagated through compacted fabric of a black hole may shake up entire atoms of dust and gas at an accretion disc. Dust and gas molecules could be vibrated violently and subatomic particles will tear apart and collide together to form nuclear fusion ball with different masses and momentum.

The nuclear fusion ball of a condensed matter may shake up violently to heats up and spinning up rapidly. The density, thermal energy, momentum and kinetic energy of such condensed ball could be increased incredibly due to powerful singularity tunnel waves that lead to drag it inward into the internal shell of an event horizon. The density of an internal shell of an event horizon is so high and it is distorted as a compacted ball of concentrated matter around the singularity. The nuclear fusion ball may start with a rapid transition as rolling ball to fall into the closer point from singularity. The nuclear fusion ball needs additional energy and momentum to swim against powerful repulsion force of a singularity, as a result the surface temperature and thermal energy of a nuclear fusion ball may increase to millions, billions, and trillions of kelvins to travel through strict potential barrier of a black hole, and collide with a singularity ball to feed it. The nuclear fusion balls do not have enough density, thermal energy and momentum to reach the heart of a black hole. In fact, the density, thermal energy, rotational and transitional kinetic energy of a nuclear fusion ball could be increased to travel with a speed higher than the speed of light. The nuclear fusion ball will get squeezed into point similar to the radius of subatomic particles to give birth a new compacted object named superparticle. The superparticle maybe formed from remnant core of a dead and collapsed fusion ball during its increment of temperature and rotations. The nuclear fusion ball has huge size and minimum density as compared to superparticle. The radius of a nuclear fusion ball should be decreased when immersed into the core of a black hole typically in the edge of a singularity where matter and energy distorted and vibrated violently, and capable of tearing a part of any state of matter and energy in its path. An event horizon of a black hole has been warped and squeezed steeply around the singularity to get spherical shape that named black hole sphere. An event horizon of a black hole has two main zones are compacted and spherical zone that shields a singularity directly, and external zone of event horizon has a flat shape that located in the border of an accretion disc. Internal shell of an event horizon has a perfect spherical shape, and photon particles have been accumulated there for a longer time. An external region of an event horizon has a flat shape and lower density. The nuclear fusion ball started to form inside an external shell of event horizon. The travel through an external shell of an event horizon could be possible and safe. The superparticle could be formed from dense core of a collapsed fusion ball inside an internal shell of an event horizon. An internal shell of an event horizon is a place where fabriton particles, photon particles, and superparticles are squeezed and oscillated violently. The photon particles have been trapped and accumulated inside an event horizon, because it has limited mass, wavelength, momentum, energy, and size.

The space among Fabriton particles has been distorted into Planck length and fabriton radius according to mass and density of singularity. The mass of a fabriton particle is 10 billion times lower than the mass of an electron particles, and its radius is tens of billion times smaller than the radius of an atom [29]. Furthermore, superparticles have enough chance to get squeezed and heated up steeply when immersed into the deep heart of a black hole. Black hole superparticles have

huge density, energy, and momentum to move and pass through the entire structure of a black hole. The superparticle with a mass of Sun ($m = 2\ x\ 10^{30}\ kg$), radius of proton ($r = 10^{-15}\ m$) and travelling with a speed higher than the speed of light ($v = 10^{20}$ m/s) inside an event horizon of a Supergiant black hole. Its transitional kinetic energy, rotational kinetic energy, and internal thermal energy incredibly high according to eqn. (8), eqn. (9) and eqn. (13) yields to: $\boldsymbol{KE_T = \frac{1}{2}mv^2}$,

$$\boldsymbol{KE_T = \left(\frac{1}{2}\ x\ 2\ x\ 10^{30}\ kg\ x\ 2\ x\ 10^{20}\frac{m}{s} x\ 2\ x\ 10^{20}\frac{m}{s}\right)},$$

$KE_T = \boldsymbol{4\ x\ 10^{70}\ J}$. The Superparticle has enormous transitional kinetic energy, rotational kinetic energy, and thermal energy due to its rapid transition inside the violent environment of a black hole. The rapid transition of a superparticle inside a black hole requires a speed higher than the speed of light and energy bigger than the energy of such energy produced by the Sun for a longer time. The super particle has huge spinning speed, energy, momentum, turbulent, and tidal forces to distort and heat an accretion disc of a black hole. The rotational energy and transition effect of superparticles inside the black holes are two main reasons for accreting and heating entire gas and dust particles in the accretion disc. Rapid transition of superparticles may produce strict turbulences and ripples in the belt of plasma that orbits the black hole.

Dust and gas particles may glow and emit photons with higher frequency, temperature, and energy. Superparticles may increase the thermal energy and kinetic energy of materials in the accretion disc to glow more, and move with higher kinetic energy and tangential speed. Furthermore, The Thermal energy and kinetic energy of molecules in the accretion disc had been increased enormously, as a result the friction force and collision opportunity of such molecules may increase widely to form nuclear fusion ball and superparticles from violently collided particles in the accretion disc. Molecules have been collided, dragged and squeezed in the black hole to produce nuclear fusion balls and superparticles. The black hole is a violent environment where the hottest and energetic particles orbit the black hole, but the dense fusion ball and superparticles immersed deeply into the inner shells of black hole. The black hole singularity and super particles are acting directly on the distortion and acceleration of molecules in the accretion disc. The effects of a rotational energy of a singularity and rapid transition of superparticles have been propagated through an event horizon and accretion disc to shake up, and excite molecules in the accretion disc and make them to glow with high frequencies and enormous degrees of temperature. Fraction of rotational energy of a singularity and kinetic energy of superparticles have been converted into materials in an accretion disc to move, vibrate and glow with high photon energy and momentum. The black hole is a fantastic system of the squeezed type of matter and energy. The dynamic of energy production and conversion similar to any other system or celestial objects in the universe. The energy and momentum could be conserved in the entire structure of a black hole. The energy can't be created and annihilated inside a black hole, but it can be converted as any systems or celestial objects. The black hole itself could be one of celestial objects, but its density incredibly high and violent. Matter and energy could be squeezed steeply at the moment that entered into the black hole sphere. Human body and objects will face huge gravity, pressure, and tidal force once fall into the event horizon zone, typically inside internal shell of an event horizon at the edge of singularity. The black hole singularity has powerful tidal force to tear apart atoms, and elementary particles from dragged objects. Particles and objects trapped, squeezed, and teared apart when fall into the bottom of black hole violently to produce superparticles.

The concept of superparticles should be tested using a powerful particle machine. We need to produce superparticles to generate huge amounts of electric energy for new generations. It is essential to exploit the power of superparticles for cosmic travel in the newly developed rockets. The probability of making a powerful machine to use superparticles is difficult in practice but will be possible in the future. Humanity still has a few years to survive on this blue planet the Earth, but the future for travel into galaxies and distant edges of the universe may be verified after hard work. The plasma rocket that works by superparticles could be possible in a sooner time. We need to produce energy from transition of atoms and particles with a speed lower or higher than the speed of light to build up powerful machine in the future travel into the edge of galaxies and visible universe. The galaxies and visible universe have been created for the benefit of creatures to travel to the edge of the universe and start with new life here. Climate change, natural disasters, energy crisis, and wars for energy still corrupt our lifestyle. The people in this world needs to develop a new concept of how to release real energy from ordinary matter and exploit it for peaceful purposes. We don't have much chance to survive on this fantastic planet the Earth. Today mankind and living creatures are required to survive moreover. Humans are obliged to work together as intelligent creatures for the best future and establish a new powerful machine for time travel to start the best life in the newly detected planet and galaxy that support life.

7. COSMIC OBJECTS

Cosmic objects could be the direct responsible of the distortion and heating an accretion disc of a black hole. The celestial objects have enough mass, density, momentum, and energy to warp cosmic fabric and form strong ripples in its structure. The black hole and its accretion disc could be vibrated and heated up when gravitational waves of celestial objects pass through it. The universe is a fabric of trillions of numbers of stars, planets, and galaxies, they are held together

by a dark fabric of matter and energy. The celestial objects are capable of making tunnels and turbulences in the fabric of Cosmos. An effect of the gravitational tunnel waves of entire celestial objects have been distributed through a cosmic fabric to attract and repulse one another and save the general balance of a Universe. The universe is a turbulent fabric of celestial objects, atoms, and fabriton particles. The celestial objects have enough mass and pressure to distort the dark fabric and release its energy as gravitational waves through dark fabric. The gravitational tunnel waves of celestial objects could be propagated through a cosmic dark fabric to feed an accretion disc of a black hole with additional energy and momentum. An accretion disc of a black hole may absorb gravitational tunnel waves of celestial objects, as a result it starts with rapid vibrations and starts with heating. The spinning speed and momentum of an accretion disc could be increased due to absorption any fraction of energy from its surrounding. Black hole is a dense object, and it is travelling in the universe with an absolute freedom. It may face powerful gravitational waves during its journey. The celestial objects as stars and planets could be sheds apart due to powerful tidal force of a black hole. The supermassive black hole has a powerful tidal force to tear huge amounts of mass from celestial objects in the distant and closest locations from itself [30]. The companion star can feed a tiny black hole, and high-mass black holes, as a result, the black hole may proliferate rapidly. The black hole has enough gravity, tidal force, and energy to tear apart molecules from the external surface of stars [31]. The mass of Stars and planets had been dragged towards the black hole and feeding it with additional mass. The potential energy of dropping mass of stars may convert into kinetic energy and thermal energy for a black hole. The mass of a black hole could be increased when devouring amount of materials from its surrounding. The mass and thermal energy of an accretion had been changed dramatically due to accreting material from celestial objects. The black hole will emit powerful radiation as x-ray and gamma rays due to collecting gas and dust particles from celestial objects. The mass and density of a black hole have been increased rapidly since tearing and collecting particles from celestial objects. Gas and dust particles are spiraling and dropping urgently inward into the black hole to feed it. The black hole may grow quick since accreting huge amount of mass and dust particles from its border. The black hole singularity has powerful gravitational tunnel waves and acting directly on the vibration and heating celestial objects in its border. The nuclear fusion and surface temperature of stars increased since powerful singularity tunnel waves passed through them. The star is a dense ball of plasma, it has the capacity to absorb gravitational tunnel waves of a black hole to accelerate its fusion processes and increase its thermal energy. The neighbor stars of a black hole have shorter lifetimes than the stars they are living in the furthest location from a black hole, because the tidal force and gravitational tunnel waves of a black hole may accelerate the burning processes of star, and reduces its lifetime. The powerful singularity tunnel waves and tidal effect of a black hole may increase the internal energy and surface temperature of a companion stars and celestial objects. The tidal force of a black hole may increase the fusion processes in the heart of a companion star to explode violently and squeezes its core steeply to produce a black hole.

The companion star may tear apart and releases fraction of its mass and hot plasma since passes beside the black hole. The black hole can tear apart fraction or total mass from companion stars. The celestial objects such as stars and planets are the main fuel for black holes. They can feed a black hole, and let it grow and glow. An accretion disc of a black hole may glow as hot plasma of energetic particles due to collecting mass from its companion stars and planets. The probability of friction and collision has been increased among dust and gas molecules in the accretion disc, as a result, the thermal energy of particles will increase steeply to radiate powerful radiations with high energy and frequencies. Gus, atoms, and dust particles could be torn apart due to friction, collision, and increment of their thermal energy and kinetic energy. The dust, gas, and subatomic particles can fuse due to collision. The fused and denser ball of collided atoms may fall into the event horizon of a black hole to produce superparticles. Gas, and dust particles have lower density and minimum energy, as a result they can't fall into the heart of a black hole directly. The black hole singularity has powerful tidal force and repulsion force as a result atoms and molecules in the accretion disc are struggling to spiraling towards the singularity. Gas and dust particles may orbit the black hole in the accretion for limited time or collide together to form nuclear fusion ball and superparticles. Most of Gas and dust particles in an accretion disc had been collided together violently and annihilated urgently. The fate of a material in the accretion disc has been determined, it could be evaporated during friction and reflects into space again as radiation particles or it may be collided and fused together to form nuclear fusion ball and immerse deeply into the heart of a black hole as superparticle. The nuclear fusion ball that formed from collided particles in the accretion disc may convert to superparticles due to rapid transition inside an event horizon of a black hole. In fact, superparticle in its violent transition may produce powerful ripples and gravitational waves that lead to increase the distortion and thermal energy of an accretion disc. The mechanism of accreting and heating an accretion disc of a black hole is a great challenge in this era. Eventually, the singularity, superparticles and cosmic objects have the capacity to distort and heat up an accretion disc of a black hole. The probability of heating an accretion disc of a black hole by celestial objects, superparticles, and cosmic objects has changed our conception deals the formation and evolution of different types of black holes. The thermal energy and luminosity of

an accretion disc of a black hole has been increased gradually by powerful gravitational tunnel waves that spread out from dense, and more massive objects of a visible universe.

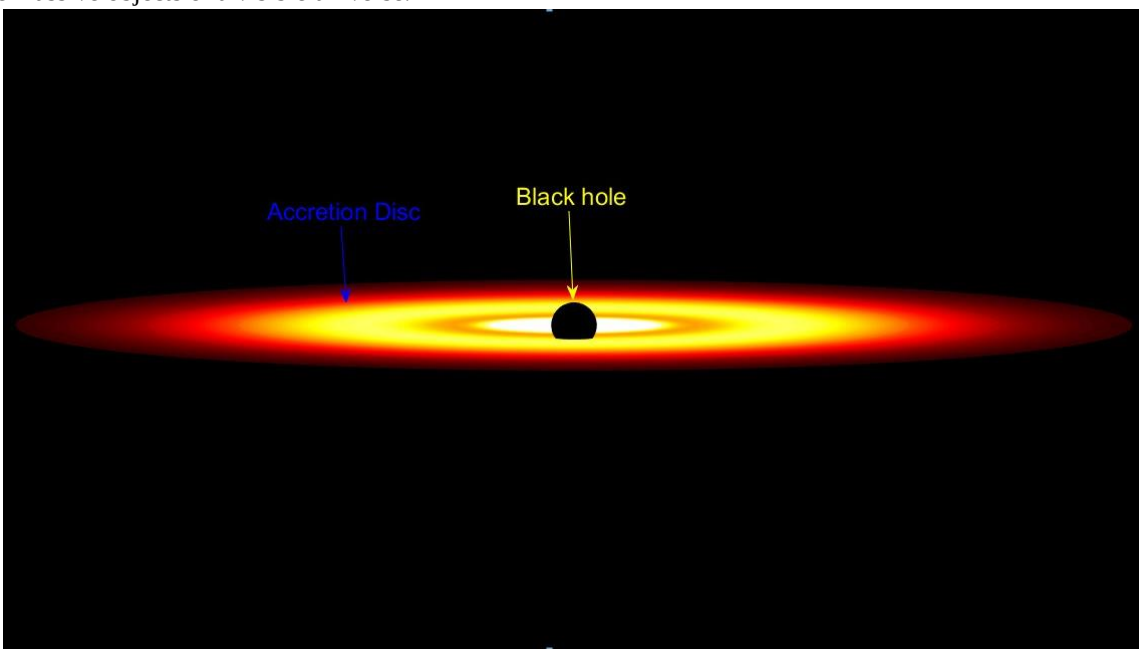

Fig. 2. Distortion and Heating an Accretion Disc of a Black Hole

8. BLACK HOLE MYSTERY

The mystery and illusion of a black hole have astonished entire scientists for decades. The term 'black hole' was first suggested by an American physicist J.A. Wheeler because everything, including the light wave and any electromagnetic waves have been trapped and vanished inside a black hole, and consequently, it appeared as black and dark [32]. The concept of an accreting and heating an accretion disc of a black hole may change our idea deals the structure of a black hole and help us to solve the mystery of a black hole structure and its particles. Scientists have been struggling to find a possible solution for the mystery of a black hole for decades. Most of scientists couldn't solve the mystery of a black hole and still can't understand the structure of a black hole precisely. Why people can't understand black hole as a whole and reasons, there are many reasons: **first of reason** is that scientists failed to calculate the radius of a black hole singularity. Most of them believed that the black hole singularity has a zero radius and infinity density, it is a big problem in physics and it is not right anyway. The radius of a black hole singularity maybe same as the radius of atoms or subatomic particles according to its angular momentum, density, thermal energy, spinning speed, and rotational energy. Scientists believed that the radius of a singularity could be zero according to general theory of relativity. The radius of a black hole singularity can't be zero under gravitational pressure because the thermal pressure of photon particles may increase the singularity radius and suspend the reduction of a singularity ball. The gravitational force and pressure that worked to reduce the size of a singularity ball may face thermal pressure acting directly on a singularity's expansion. The thermal energy is a quantum effect of a singularity sphere. The tussle between gravitational energy and thermal energy suspended the contraction of a singularity sphere and stabilized it to be the same as the radius of an atom or subatomic particles. The hydrostatic balance of a black hole singularity could be similar to that found in the core of stars during fusion processes. The gravitational pressure from the mass of stars initiated to squeeze the core of a star, and thermal energy produced due to the nuclear fusion process may be worked on the expansion of the star inversely, as a result, the star remains a stable and spherical object. The thermal energy and thermal pressure of high-energy photon particles have worked against gravity in the stars and black holes.

The **Second** problem of scientists is that they could not understand the secrets of a gravity and the reality of dark fabric matter and energy. The black hole is a dense ball of distorted state of matter and energy that warped steeply around the singularity. Dark fabric matter and energy have been distorted around a dense ball of a singularity. The black hole singularity has powerful tidal force, stress, and gravitational tunnel waves that propagate through the compacted fabric of a black hole to warp and heat an accretion disc. An event horizon of a black hole is a dense sphere of the concentrated fabriton particles and an ordinary matter that distorted widely around the singularity even light couldn't pass through it easily. The radius and mass of a fabriton particle is still a mystery among most people whom worked in the gravitational theory. Vera Rubin measured the rotational speeds of galaxies and predicted that dark matter has the role of speeding up stars and celestial objects in the

galaxy [33]. The four-dimensional mass is a black hole located in the heart of galaxies, and it generates a powerful gravitational field of the galaxy [34]. The supermassive black hole involved a crucial role in the formation and evolution of a galaxy disc and black hole accretion disc.

The **Third problem** is the black hole information paradox between the General relativity is predicted the information could be lost forever inside a black hole, and Quantum mechanics confirmed that information can release from a black hole, because most of the people think that the black hole has huge density and a strong gravitational field even light can't escape from its attraction force. But they still do not know that the black hole has a dense ball of singularity and distorted zone of an event horizon is a dark fabric matter and energy which warped steeply around the singularity. The singularity tunnel waves can spread out from the deep of a black hole and distributed throughout the black hole sphere and accretion disc to appear what is going on inside the structure of a black hole. The fabriton particles of dark matter have been squeezed to critical distance and limited vacuum even light particles have been trapped and stored inside an event horizon for a longer time because photon particles have lower speed, momentum, frequency, energy, and larger wavelengths. The vacuum among fabriton particles that permit a photon particle to travel throughout it is lower than the wavelength of light. The photon particles may require enough space, an additional energy, and any other chance to escape from powerful attraction force of a black hole. The photon particles may escape from a black hole in an external shell of a black hole in the accretion disc zone where the density of fabriton particles is lower than that in an event horizon. An event horizon has lower concentration of fabriton particles in the outer shells of a black hole typically in the accretion disc. The density and concentration of fabriton particles have been increased in the internal zone of a black hole, typically around the singularity where dark fabric matter has been squeezed steeply. If you travel through an event horizon of a black hole you can't see the stars, planets, galaxies, and world around the black hole because the photon particles can't fall directly into an event horizon of a black. The photon particles have limited energy, momentum, and wavelength to travel through a condensed matter. The matter and energy have been accumulated and condensed around the singularity, even photon particles have been trapped and concentrated in such a dark sphere and violent environment. **Fourth mystery** of a black hole or a black hole singularity problem still not clear among the scientific community is that the region which located between the external surface of a singularity and the internal shell of an event horizon is a singularity tunnel vacuum that shifts up under an effect of high thermal pressure, electromagnetic field, singularity rotation, and the gravitation pull of a singularity. The size of that space same as the size of a singularity ball, but it requires the mass same as the mass of a singularity to be filled up. Unfortunately, this Quantum vacuum may not be completed anyway or at any time because the singularity is the place where collapsing any type of matter and energy forever. Scientists couldn't recognize the size of space that appears between external surface of a singularity and an internal surface of an event horizon. This space is not bigger much, it is same as the radius of singularity, and it could be increased and decreased due to rotational energy and momentum of a singularity. After all, the radius and density of a black hole singularity are variable due to the gravitational pressure and thermal energy of a singularity.

The **final mysteries** are that the origin of our Visible Universe and multiverses is from superparticles that were formed from collapsed matter and energy inside the Supergiant black hole before and after the Big Bang event. Most scientists believe that the origin of our universe started 13.8 billion years ago from a Big Bang Event. The visible universe was a tiny point, very dense and hot before its rapid inflation and evolution. The universe was exploded and expanded after a Big Bang event to form Stars, planets, galaxies, Quasars, atoms, photon particles, and whole celestial objects. Scientists still don't know the mechanism of creating the Universe inside the supergiant black hole. Indeed, the visible universe and multiverses are only superparticles that could be formed in a violent world, inside a supergiant black hole from enough amount of matter and energy that collapsed strictly. The black hole singularity can grow rapidly when its heart is bombarded directly by superparticles. The mass, density, gravity, thermal energy, entropy, rotational frequency, and rotational energy of a black hole singularity could be increased steeply during such a violent bombardment [35, 36]. An ordinary matter and dark fabric matter could be stretched and compressed in the depth of a supergiant black hole to form the superparticles with the mass of a visible Universe. The superparticles could be released into infinite space to form the visible universe and multiverses. The surviving superparticles with a mass of the universe can make a universe since evaporated, and the thrown superparticles with the mass of stars and planets may become the singularity for newborn black holes. The black hole has mass, angular momentum, entropy, thermal energy, powerful radiations, energetic particles, and charges. The black hole surrounded by thin accretion disc of hottest state of matter and energy [37, 38, 39, 40]. The particles may reach the relativistic speed and extreme temperature to millions or billions of Celsius. The friction, violent collisions, and acceleration of black hole particles play a crucial role in the formation of superparticles.

The **superparticle** with mass of a visible universe could be escaped from a supergiant black hole and evaporated into space to form whole galaxies, and celestial objects. If a superparticle passed through an accretion disc of a black hole may make a powerful jet of plasma in the top or bottom of a black hole. Black holes have powerful jets of plasma due to

its tidal force, surviving superparticles, and singularity tunnel waves or during collecting and accreting matter from its surrounding . Superparticles can escape and travel through an accretion disc of a black hole with a speed of light or light year per second. It is possible one or two jets of hottest state of matter and energy come out immediately from interior of a black hole. Twin jets from a black hole are violent streams of matter and energy ejected from a black hole's poles in different directions at nearly the speed of light. These jets are formed since huge amount of gas and dust particles are spiralling inward into the black hole or an escapement of two superparticles through accretion disc of a the black hole's intense gravity and magnetic fields. These jets vary in length, thickness, brightness, and speed, and can have a significant impact on the formation and evolution of stars and galaxy structure. Powerful and greatest type of a black hole jet was formed since the cosmic mass superparticle penetrated through an accretion disc of a parent supergiant black hole before or after big bang event. This phenomena can be occurred in the early steps of a universe creation and evolution.

Fig. 3. Twin Jets of a Black Hole

9. RESULTS AND DISCUSSION

The mass, radius, size, density, tangential velocity, angular speed, spinning speed, moment of inertia, Rotational kinetic energy, Kinetic energy, thermal energy, number of revolutions, and frequency of a black hole singularity could be changeable during time and according to the nature and environment of a singularity. The singularity has huge rotational kinetic energy and maximum spinning speed to distort and heat an accretion disc. Black hole singularity was formed during the ultimate death of a collapsed star and steeply squeezed superparticles. The mass, density, spinning speed, thermal energy, rotational energy, frequency, and

angular momentum of a black hole singularity could be rapidly increased during its surface bombardment by superparticles. Superparticle has enough capacity to travel against singularity tunnel waves and pass through powerful gravitational barriers of black hole to reach the surface of a singularity. The radius of a superparticle has been reduced steeply and its surface temperature increases to trillions of kelvins due to its rapid transition into the heart of a black hole to collide with a singularity or pass beside a singularity to reach the singularity conditions and give birth for a newborn black hole. The superparticle has a spherical shape as dense and rigid ball, it has very tiny radius and size due to its rapid transition in the compacted fabric of a black hole. The superparticle with the mass of a rock or an automobile ($\boldsymbol{m = 2\ x\ 10^{3}\ kg}$), its radius is closed to the radius of a fabriton particle ($\boldsymbol{r = 2\ x\ 10^{-20}\ m}$), its tangential velocity higher than the speed of light millions or billions of times ($\boldsymbol{v = 3\ x\ 10^{17}\ m/s}$), it has tremendous angular speed ($\boldsymbol{w = 1.5\ x\ 10^{37}\ rad/s}$), its frequency should be ($\boldsymbol{f = 2.388\ x\ 10^{36}\ Hz}$), its density high as a singularity sphere ($\boldsymbol{\rho = 5.97\ x\ 10^{61}\ kg/m^{3}}$), its moment of inertia ($\boldsymbol{I = 3.2\ x\ 10^{-37}\ kg.m^{2}}$), it possesses powerful rotational kinetic energy ($\boldsymbol{KE_R = \frac{1}{2}Iw^{2} = 3.6\ x\ 10^{37}\ J}$), and huge transitional kinetic energy ($\boldsymbol{KE_T = \frac{1}{2}mv^{2} = 9\ x\ 10^{37}\ J}$) to pass through a black hole and ripples the black hole singularity, event horizon fabric, and entire atoms in an accretion disc of a black hole. Super transition and rapid travel of superparticles should appear and be detected as powerful turbulences and gravitational waves that propagate throughout a black hole, celestial objects, and the entire fabric of a visible universe.

The fraction of mass of a superparticle dissipated as a radiation due to its rapid transition, and most of its mass has been crashed and squeezed inward to form a dense ball of a superparticle. A superparticle has a tiny radius to spin out rapidly according to the conservation law of angular momentum, and the fraction of its mass is lost as thermal energy to accelerate its spinning speed and tangential velocity to travel against the singularity tunnel waves. The surface temperature of a superparticle increases to billions or trillions of Celsius. The gravitational pull of a black hole singularity and the thermal energy of a superparticle may strongly accelerate the superparticle to travel inside an event horizon with a speed higher than the speed of light. The density of a black hole sphere is incredibly high, as a result, the radiation and thermal energy that produced from the fraction of mass that evaporated from a superparticle had been trapped and accumulated around the external surface of a superparticle to feed it with additional energy and accelerate it into much higher speed. The photon particles are mostly accumulated and hang off steeply around an external surface of a superparticle, as a result, the superparticle is capable of traveling into the bottom of a black hole with a speed higher than the speed of light. An escape velocity from the external surface of a singularity ball and denser superparticles could be exceeded the speed of light, as a result most of photon particles are struggling to escape from external surface of singularity and superparticles, and tremendous numbers of photon particles have been trapped around them for a longer time and feed them as continuous energy of nature. Black hole is not a dark sphere as a whole, it is contained with high ratio of fabriton particles, trapped photons, and energetic superparticles. The black hole is a turbulent system of a squeezed matter and powerful energetic particles.

The Earth is a rigid sphere, its mass is ($m = 5.97\ x\ 10^{24}\ kg$), its radius (r = 6378000 meter), its radius as a black hole approximately to be (r = 1 centimetre). The initial angular velocity of earth due to its spin motion per day for 24 hours is ($w = \frac{2\pi}{time} = \frac{2\ x\ 3.14}{24\ x\ 3600\ s} = 7.27\ x\ 10^{-5}\ \frac{rad}{s}$). The initial angular momentum of the Earth's Planet about its rotation axis is $\left(L_i = Iw = \frac{2}{5}mr^{2}\ x\ w = 7.062\ x\ 10^{33}\ kg.\frac{m^{2}}{s}\right)$. The angular momentum of earth in its rotation around the Sun$\left(L = 2.67\ x\ 10^{40}\ kg.\frac{m^{2}}{s}\right)$. The tangential velocity of earth according to eqn. (10) is ($v = rw$), ($v = 6378000\ m\ x\ 7.27\ x\ 10^{-5}\ \frac{rad}{s} = 463.68\frac{\mathrm{m}}{\mathrm{s}}$). The black hole singularity with a mass of earth, and its radius could be very small about ($r = 2\ x\ 10^{-13}\ m$) according to the conservation law of an angular momentum ($L_i = L_f$), and singularity density condition that should be at least ($\rho = 2\ x\ 10^{60}\ kg/m^{3}$). The density of an Earth's mass singularity about ($\rho = 1.78\ x\ 10^{62}\ kg/m^{3}$). The angular velocity of a black hole singularity with a mass of earth is $\left(w = 7.393\ x\ 10^{34}\frac{rad}{s}\right)$ when final angular momentum of an Earth's mass singularity compared and calculated by initial angular momentum of Earth. The tangential velocity of an earth's mass singularity maybe ($v = 1.4786\ x\ 10^{22}\ m/s$), its frequency could be ($f = 1.177\ x\ 10^{34}\ Hz$), its moment of inertia very low ($I = \frac{2}{5}mr^{2} = 0.09552\ kg.m^{2}$) and its rotational kinetic energy extremely ($KE_R = 2.61\ x\ 10^{68}\ J$).

The Star with a mass of a Sun ($m = 2\ x\ 10^{30}$ kg), its radius ($r = 7\ x\ 10^{8}\ m$), its rotational period is 25 hours for any single rotation ($t = 25\ hours = 25\ h\ x\ 60\ min\ x\ 60\ s = 90000\ s$), its initial angular momentum in its axis of rotation is $\left(L_i = I_i w_i = \frac{2}{5}mr^{2}\ x\ \frac{2\pi}{t} = 2.735\ x\ 10^{43}\ kg.\frac{m^{2}}{s}\right)$. The black hole singularity with a mass of Sun, its radius same as the radius of a hydrogen atom ($5.3\ x\ 10^{-11}$ m) according to conservation law of the angular momentum, and singularity density. The angular velocity of a solar mass singularity with a mass of a Sun is $\left(\boldsymbol{w_f} = 1.217\ x\ 10^{34}\frac{rad}{s}\right)$ when final angular momentum of a Sun's mass singularity has been

equalized with an initial angular momentum of a Sun as a Star before it is collapsed to be a black hole singularity $\left(L_i = L_f = I_f w_f\right)$, then $\left(\frac{2}{5}mr^2\ x\ \boldsymbol{w_f} = 2.735\ x\ 10^{43}\ kg.\frac{m^2}{s}\right)$. The solar mass singularity has a huge tangential velocity ($v = 6.4501\ x\ 10^{23}\ m/s$), its frequency could be ($f = 1.938\ x\ 10^{33}\ Hz$), its moment of inertia about ($I = \frac{2}{5}mr^2 = 2247200000\ kg.m^2$) and its rotational kinetic energy extremely ($KE_R = 1.664\ x\ 10^{77}\ J$). The white dwarf is a remnant core of a dead solar mass star. A new black hole singularity with a mass of Sun, Earth, Moon, mountains, rocks, and animals could be formed inside an event horizon of a black hole from dense and compacted superparticles that escaped from ultimate death and Collison with a black hole singularity.

Betelgeuse is a red supergiant, and the brightest star in the constellation of Orion. Its mass is 20 times the mass of a Sun ($m = 20\ x\ 2\ x\ 10^{30}$ kg), then mass of a Betelgeuse is ($m = 4\ x\ 10^{31}$ kg), its radius ($r = 6.17\ x\ 10^{11}\ m$), its rotational period ($t = 8\ years = 8\ x\ 365\ x\ 24\ x\ 60\ x\ 60 = 252288000\ s$). It has an initial angular momentum in its axis of rotation is $\left(L_i = I_i w_i = \frac{2}{5}mr^2\ x\ \frac{2\pi}{t} = 1.516\ x\ 10^{47}\ kg.\frac{m^2}{s}\right)$. The black hole singularity with a mass of a Betelgeuse star has a radius same as the radius of a Calcium atom ($1.97\ x\ 10^{-10}$ m) according to conservation law of an angular momentum, and the singularity density condition, its density should be ($\rho = 1.25\ x\ 10^{60}\ kg/m^3$). The angular velocity of a stellar mass singularity with a mass of a Betelgeuse star is $\left(\boldsymbol{w_f} = 2.44\ x\ 10^{35}\frac{rad}{s}\right)$ when final angular momentum of a singularity with a mass of a Betelgeuse star has been equalized with an initial angular momentum of a Betelgeuse star $\left(L_i = L_f = I_f w_f\right)$, then $\left(1.516\ x\ 10^{47}\ kg.\frac{m^2}{s} = \frac{2}{5}mr^2\ x\ \boldsymbol{w_f}\right)$. The Betelgeuse mass singularity has a huge tangential velocity ($v = r\ w_f = 4.8068\ x\ 10^{25}\ m/s$), its frequency could be ($f = 3.885\ x\ 10^{34}\ Hz$), its moment of inertia about ($I = \frac{2}{5}mr^2 = 620944000000\ kg.m^2$) and its rotational kinetic energy extremely high ($KE_R = 1.8484\ x\ 10^{82}\ J$).

Rigel is a blue and hottest type of supergiant star, it is located in the constellation of Orion, and its surface temperature is 12,000 kelvins. Its mass maybe 18 times the mass of a Sun ($m = 3.59\ x\ 10^{31}$ kg), it has huge radius ($r = 5.5\ x\ 10^{10}\ m$), its rotational period ($t = 520\ days = 520\ x\ 24\ x\ 60\ x\ 60 = 44928000\ s$). Rigel star has an initial angular momentum due to its rotation in its axis is $\left(L_i = I_i w_i = \frac{2}{5}mr^2\ x\ \frac{2\pi}{t} = 6.07\ x\ 10^{45}\ kg.\frac{m^2}{s}\right)$. The Rigel star may be exploded to form a black hole after its fuel of fusion runout. The black hole singularity with a mass of a Rigel star has a radius same as the radius of an Iron atom ($r = 1.26\ x\ 10^{-10}$ m) according to conservation law of an angular momentum, and the singularity density condition, its density should be ($\rho = 4.287\ x\ 10^{60}\ kg/m^3$). The angular velocity of a stellar mass singularity with a mass of a Rigel star is $\left(\boldsymbol{w_f} = 2.66\ x\ 10^{34}\frac{rad}{s}\right)$ when final angular momentum of a singularity with a mass of a Rigel star has been equalized with an initial angular momentum of a Blue Rigel star $\left(L_i = L_f = I_f w_f\right)$, then $\left(6.07\ x\ 10^{45}\ kg.\frac{m^2}{s} = \frac{2}{5}mr^2\ x\ \boldsymbol{w_f}\right)$. The singularity with a mass of Rigel star has a huge tangential velocity ($v = r\ w_f = 3.3516\ x\ 10^{24}\ m/s$), and frequency ($f = 4.235\ x\ 10^{33}\ Hz$), its moment of inertia about ($I = \frac{2}{5}mr^2 = 227979360000\ kg.m^2$) and its rotational kinetic energy extremely high ($KE_R = 8.065\ x\ 10^{79}\ J$).

A supermassive black hole has the largest event horizon and a huge amount of mass, its mass could be hundreds of thousands, or millions to billions of times the mass of a Sun, and its radius is extremely large about millions of kilometers. The singularity of a supermassive black hole has a mass maybe 10 billion times the mass of a Sun ($m = 2\ x\ 10^{40}$ kg), and its radius same as the radius of a Helium atom ($3.1\ x\ 10^{-11}$ m) according to the conservation law of an angular momentum, and the singularity density condition, its density should be ($\rho = 1.603\ x\ 10^{71}\ kg/m^3$). The tangential velocity of a singularity that located at the heart of a supermassive black hole is very high ($\boldsymbol{v} = \sqrt{\frac{Gm}{r}} = 2.074\ x\ 10^{20}\ m/s$), its angular velocity is $\left(w = \frac{v}{r} = 6.69\ x\ 10^{30}\frac{rad}{s}\right)$, its rotational period ($t = 9.386\ x\ 10^{-31}\ s$), its frequency ($f = 1.065\ x\ 10^{30}\ Hz$), its moment of inertia about ($I = \frac{2}{5}mr^2 = 7.688\ x\ 10^{18}\ kg.m^2$), and its rotational kinetic energy ($KE_R = 1.72\ x\ 10^{80}\ J$). The radius of a black hole singularity increases due to an increment of its temperature and thermal energy. The radius of a singularity may not become zero under gravitational pressure and gravitational force because the thermal energy of a singularity could be increased extremely to stop the singularity from collapsing inward. The gravitational pressure causes the singularity ball to reduce its radius inward, and radiation pressure is stressed on the singularity to expand inversely. An initial angular momentum of a black hole singularity with a mass ten billion times the mass of a Sun, and its radius same as the radius of a Helium atom due to its rapid rotation in its axis is $\left(L_i = I_i w_i = \frac{2}{5}mr^2\ x\ \frac{2\pi}{t} = 5.14\ x\ 10^{49}\ kg.\frac{m^2}{s}\right)$. The black hole singularity with a mass of 10 billion Suns, and its radius under thermal energy, and radiation pressure has been increased to the radius of an Iron atom ($1.26\ x\ 10^{-10}$ m), then its final angular momentum is $\left(\boldsymbol{w_f} = 4.047\ x\ 10^{29}\ \frac{rad}{s}\right)$, according to conservation law of angular

momentum $\left(L_i = L_f = I_f \boldsymbol{w_f}\right)$, $\left(5.14\ x\ 10^{49}\ kg.\frac{m^2}{s} = \frac{2}{5} mr^2\ x\ \boldsymbol{w_f}\right)$.

A Supergiant black hole is the largest type of a black hole, its radius exceeds the radius of a light year, its event horizon is more than 10 and 20 light years according to Schwarzschild radius. Its mass could be trillions of times the mass of a Sun, and thousands of times the mass of galaxies. It has huge radius about thousands or billions of trillions of kilometers. The singularity of a supergiant black hole has a mass that may be thousands, millions, or billions of times the mass of a Milky Way galaxy ($m = 2\ x\ 10^{45}$ kg). Its radius maybe same as the radius of a Lithium atom ($r = 1.52\ x\ 10^{-10}$ m) according to the conservation law of an angular momentum, and the singularity density condition, its density should be ($\rho = 1.36\ x\ 10^{74}\ kg/m^3$). The radius of a black hole singularity is the same as the radius of atoms or particles, and it is not zero anyway because the thermal energy works against the gravitational effect of a black hole singularity and suspends its reduction, as a result, the radius of a singularity ball could be same as the radius of Atoms or particles. The tangential velocity of a singularity that located at the heart of a supergiant black hole is very high ($\boldsymbol{v} = \sqrt{\frac{Gm}{r}} = 2.963\ x\ 10^{22}\ m/s$). Its angular velocity is $\left(w = \frac{v}{r} = 1.949\ x\ 10^{32}\ \frac{rad}{s}\right)$, its time period of rotation ($t = 3.22\ x\ 10^{-32}\ s$), and its frequency ($f = 3.104\ x\ 10^{31}\ Hz$).It has a moment of inertia about ($I = \frac{2}{5} mr^2 = 1.848\ x\ 10^{25}\ kg.m^2$), and its rotational kinetic energy ($KE_R = \frac{1}{2} \boldsymbol{Iw^2} = 3.51\ x\ 10^{89}\ J$). The mass, radius, density, spinning speed, rotational energy, and thermal energy of a black hole singularity could be changeable according to the conservation law of momentum and energy. Superparticles and subatomic particles could be created inside an event horizon of the supergiant black hole. Atoms are produced during nuclear fusion processes in the heart of stars. Photon particles can't pass directly into the bottom of a black hole. The photon particles that escaped from an accretion disc, celestial object, and the surface of stars could be trapped inside an event horizon of a black hole because the density of a black hole sphere is higher than the density of celestial objects in outer space. The photon particle has an opportunity to leave a black hole and it is struggling to penetrate through it. The passenger can't see what is going on around the black hole when he passes through an event horizon of a black hole, typically in the external region of an event horizon, because the light of celestial objects can't pass through a black hole directly. The passenger may see photon particles that come out from an external surface of singularity and an internal zone of an event horizon because the density of photon particles around the singularity increases violently. The photon particles act directly in the stretching and squeeze up a black hole sphere and accretion disc of dust particles. The size and density of a black hole have been increased and decreased widely due to thermal energy and rotational speed of a singularity. We can travel through the event horizon of a black hole at a speed higher than the speed of light. The singularity tunnel waves may increase the speed of passengers to reach the edge of galaxies and the universe at minimum time. The Tangential Velocity and Rotational Kinetic Energy of a Spinning Singularity can be calculated mathematically by using eqn. (9) and eqn. (10).

Table 1: Tangential Velocity and Rotational Kinetic Energy of a Spinning Singularity Ball

Singularity Mass (m)	**Singularity Radius (r)**	**Tangential Velocity of a Spinning Singularity** $\boldsymbol{v = r\,w = 2\pi\,rf}$	**Rotational Kinetic Energy of The Spinning Singularity** $\boldsymbol{KE_R = \frac{1}{2} Iw^2}$
$\boldsymbol{2\ x\ 10^3\ kg}$	$2\ x\ 10^{-20}$ m	$3\ x\ 10^{17}\ m/s$	$3.6\ x\ 10^{37}\ J$
$\boldsymbol{5.97\ x\ 10^{24}\ kg}$	$2\ x\ 10^{-13}$ m	$1.4786\ x\ 10^{22}\ m/s$	$2.61\ x\ 10^{68}\ J$
$\boldsymbol{2\ x\ 10^{30}\ kg}$	$5.3\ x\ 10^{-11}$ m	$6.4501\ x\ 10^{23}\ m/s$	$1.664\ x\ 10^{77}\ J$
$\boldsymbol{4\ x\ 10^{31}\ kg}$	$1.97\ x\ 10^{-10}$ m	$4.8068\ x\ 10^{25}\ m/s$	$1.8484\ x\ 10^{82}\ J$
$\boldsymbol{3.59\ x\ 10^{31}\ kg}$	$1.26\ x\ 10^{-10}$ m	$3.3516\ x\ 10^{24}\ m/s$	$8.065\ x\ 10^{79} J$
$\boldsymbol{2\ x\ 10^{40}\ kg}$	$3.1\ x\ 10^{-11}$ m	$2.074\ x\ 10^{20}\ m/s$	$1.72\ x\ 10^{80}\ J$
$\boldsymbol{2\ x\ 10^{45}\ kg}$	$1.52\ x\ 10^{-10}$ m	$2.963\ x\ 10^{22}\ m/s$	$3.51\ x\ 10^{89}\ J$

10. CONCLUSION

Black holes and their singularity have been produced from the collapsed hearts of Stars and escaped superparticles. The Singularity is a dense, white, very smooth, and squeezed ball of a much-warped state of matter and energy that is immersed into the core of low-mass and high-mass types of black holes. An accretion disc of a black hole has been distorted, accelerated, and heats up to millions, billions, and trillions of Celsius degrees due to an effect of a singularity rotational energy, rapid transition of superparticles, and gravitational waves of celestial objects. A black hole is a dense sphere of the warped state of matter and energy, capable of absorbing the gravitational and thermal energy of objects in the universe. An accretion disc is a ring of energetic particles that orbit the black hole at its external edge. The probability of accreting, heating, friction, and Collisions among dust and gas particles in the accretion disc has been increased to produce superparticles. A superparticle is a powerful particle that is formed from the remnant core of a condensed ball of fusion. The fused ball has been reduced and dragged to fall into the heart of a black hole, as a result the superparticle could be created from such concentrated state of matter and energy.

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Conflict of Interest

I declare that I have no conflict of interests.

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