

Sub quantum energy and finite density in singularity

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Abstract

Consider reviewing in the mass-energy equivalence, always raises too many questions like, “Is the constant speed of light (photon energy), resulting from a natural accident?” or “what’s the difference between mass characteristics and energy features while the energy rate is fixed the speed of matter can be changed but it cannot reach the speed of light”. Meanwhile when the physical and chemical processes occur, some amount of matter is converted into energy; what happened during this process, that mass with non-constant speed is converted into energy with the constant speed? The main part of this article, according to the fundamental particle physics theories and energy issues in the production and decay of pairs of matter–antimatter are included in finding the common features between matter and energy which can be considered the constant velocity of photon as a property that can be transmitted from matter into energy and vice versa and also differences in the mass, structure of matter and its relation fields are explained by the relationship between length contraction (reduce in volume) and relativistic mass and relativistic form of Newton second law which show the mass variations (i.e., the infinite speed in classical mechanics is replaced by the infinite mass). In the end with regard to the equivalence of mass-energy, definition of singularity and time with the new approach and analysis are presented.

Keywords: sub-quantum energy, new structure of matter, ultra relativistic speed, absolute black hole, singularity.

1. Introduction

In this paper, it has been attempted to scrutinize the interface between relativity and quantum mechanics through a novel approach to the established physical events. Universal constancy of the speed of light undergoes the question whether the limit on the light speed originates from a natural event or not? Regarding the phenomena of creation and decay of electron-positron pair [1], why do the related photons move at constant speed, but we could change the speed of matter and antimatter? What is the unique

characteristic of matter which is convertible to photons that move with constant speed c (speed of light)? The idea that object/particle could not travel at superluminal speeds, originates from the structure of matter and the mechanism of interaction between field and mass; that with presenting a postulate we could generalize the constancy of speed from energy to mass. By gravitational blue shift, the energy of photon and consequently its frequency will increase. What is the mechanism of increasing in the photon energy that causes increase in its frequency growth? Emphasizing on these phenomena and presenting the relation between photon's energy and frequency, this paper is to draw attention on the importance of constancy of speed in relation to the mass structure which will be scrutinized in reviewing Newton's second law.

Although by looking at the quantum structure of stars, we are able to find answers to many of questions that today physics is facing with more complex questions which quantum mechanics and relativity have no ability to answer them. Present observations show the visible world with billions of rapid-expanding galaxies and existing theories cannot explain the reasons of the Big Bang and its acceleration. There are other concepts including the cosmological constant, dark energy, dark matter and inflation, that the Standard Model of elementary particles, because of its strong frames and specifications cannot answer and will never have the ability to respond to them [2]. Now the question is: "whether these phenomena can have sub-quantum nature or not?" Although answering these questions needs more extensive investigation and researches, but now we can cross the quantum boundaries and study some of the fundamental laws of physics in the sub-quantum space and we can clearly respond to some unanswered questions by looking differently to the physical phenomena.

Newton's second law and gravitational law are the fundamental laws of physics which apparently none of them cannot limit the effectiveness of another. The mass of an object in classical mechanics can be increased illimitably (universal law of gravity) but in general relativity, there is no limit to the curvature of space [3, 4, 5]. So we meet with zero volume and infinite density (singularity) in relativity that is not acceptable in terms of observations. From sub-quantum energy view, the mentioned laws have limitations which cannot be investigated in quantum mechanics and relativity. But by sub-quantum looking at the physical phenomena and reviewing Newton's second law; can help us to specify these limitations [6]. Then we can see how each of these two laws (Newton's second law and gravity) to reach infinite value can prevent the other one.

This review strongly can change our attitude to the singularity and we will see that the time doesn't run independently of the physical existences. In other words, each physical existence is a clock and the time is a name that we use for the ticking clock

2. Relation between photon energy and sub-quantum energy

According to the principles of modern physics, Sub-quantum energy (SQE) [7] is preferred and defined in a way that it could be generalized and by using it, explained quantum and relativistic phenomena.

Definition: Sub-quantum energy is the least energy which is defined as below:

$$SQE = h\nu_{least}, \nu_{least} < \nu \quad \forall E = h\nu \quad (1)$$

Here ν is detectable photon frequency. Relation (1) shows that SQE is terms of energy that each photon consists of some SQE , so;

$$E_{photon} = nSQE \quad (2)$$

where n is an integer. For two photons with energies E_1 and E_2 we have the following equations:

$$E_2 = h\nu_2 = n_2 SQE, \quad E_1 = h\nu_1 = n_1 SQE$$

$$E_2 > E_1 \Rightarrow n_2 > n_1 \quad (3)$$

Here n_1 and n_2 are integers. With increasing in a photon's energy, its frequency also increases. Thus there should be a logical explanation between energy increases and frequency increases. Therefore, based on *SQE* definition and relation (2) could relate the relation between photon's energy and frequency and the interaction between *SQE*'s in photon's structure, i.e. with the increase number of *SQE*'s in photons, the interaction between *SQE*'s in photons will increase and the frequency that originates from the interaction between *SQE*'s will increases. Although $n \propto \nu$, this proportion does not necessarily represent an equation, but simply represents the physical fact that frequency has direct relation with the number and interaction of *SQE*'s in photon. Besides the relation between *SQE*'s and ν , could conclude that the *SQE* linear speed in vacuum relative to the inertial frames of reference, is actually the speed of light c . Since *SQE* in photon's structure has a linear speed equal to c and also it has nonlinear motions, the real speed of *SQE* is when all *SQE* nonlinear motions turn into linear motions and it only takes linear motion. In other words the limit speed of *SQE* is V_{SQE} which is faster than light speed c , i.e. $|V_{SQE}| > |c|$.

One *SQE* is a very small energy with nonzero mass (m_{SQE}) moves at $|V_{SQE}| > |c|$ relative to inertial reference frame and in every interaction between *SQE*'s with other particles or fields the speed value of *SQE* remains constant; as in every physical condition we have linear acceleration on the axes x , y and z as follows:

$$\nabla V_{SQE} = 0 \quad (4)$$

In all inertial reference frames and any space *SQE* principle shows that in every condition the speed value of *SQE* remains constant and only the linear speed of *SQE* converts to nonlinear speed or vice versa. Considering the definition of *SQE*, every photon consist of some *SQE*, if we ignore the zero rest mass of photon, much better and more real physical phenomena may be investigated. Thus, a photon with energy E has a mass $m=E/c^2$ and a linear momentum $p=mc$. In other words, a photon is a part of matter and has nonzero mass before creation that after converting to photon carries the same mass that had in the matter and after absorption by a particle (e.g. an electron), the mass of photon is added to the mass of the particle.

On the other hand, a photon with enough energy E in collision with nuclei converts to an electron-positron pair. Considering the definition of photon and relation (2) we have $E = nSQE$. From *SQE* principle it is concluded that the *SQE* exists in photon move at V_{SQE} , some of which are in the form of linear motion with the value of c and the rest of them is in the form of nonlinear motions. When photon collides with a nucleus, the forces exerted to *SQE*'s cause the conversion of some other linear motions of *SQE*'s to nonlinear motions, and electron-positron pair is created. In the inverse procedure, with absorbing each other, electron and positron decay and convert to energy. While electron-positron pair decays, the force that electron and positron exert on each other causes the conversion of some of electron and positron nonlinear motion to linear motion, and thus the created photons move at c considering relation (4) could write:

$$E = nSQE = nm_{SQE}c^2 = n(m_{SQE}c)c = nP_{SQE}c$$

$$E = nP_{SQE}c \quad (5)$$

In order to create electron-positron pair could write:

$$E = nP_{SQE}c = 2k_1P_{SQE}c + k_2P_{SQE}c$$

$$n = 2k_1 + k_2$$

$$2k_1P_{SQE}c = m_{e^-}c^2 + m_{e^+}c^2$$

The linear momentum of electron and positron after creation is as follow:

$$P_{e^-} = k_1m_{SQE}v_1$$

$$P_{e^+} = k_1m_{SQE}v_1$$

$$nP_{SQE} = P_{e^-} + P_{e^+} + k_2m_{SQE}v \quad (6)$$

And $k_2m_{SQE}v$ is the pure momentum that transfers from photon to nuclei. The effect of nuclei reaction on the rest of existing SQE 's within the photon is the change of their momentum from linear to nonlinear. Even if $k_2=0$, while colliding, the stroke from the nuclei to SQE 's of photons cause the conversion of linear momentum of SQE 's to nonlinear momentum and the reaction of SQE 's on nuclei is that nuclei is recoiled. Thus:

$$E = nP_{SQE}c \rightarrow e^- + e^+$$

Within the time distance of electron-positron pair creation, in reaction between nuclei and photon, some of the SQE 's linear velocity converts to nonlinear speeds within the structure of electron and positron, and their linear speed decreases from c to v_l . But concerning the SQE principle there would be no change in their speed value. If suppose two photon produced in pair decay, we will have;

$$\begin{aligned} m_{e^-}c^2 + m_{e^+}c^2 &= P_{e^-}c + P_{e^+}c \\ &= 2k_1m_{SQE}c^2 = 2h\nu \end{aligned} \quad (7)$$

In pair decay, because of the force that electron and positron exert on each other, some of the SQE 's nonlinear speeds which constitute the structure of these two particles convert to linear speed and two photons are created and move at c . Thus, the constancy of the speed of light does not rise from a natural event, but it is axiomatic and that is because matter (condensed energy) also consists of sub-quantum energy that moves at constant and limit speed value of V_{SQE} . When the binding forces among some of SQE 's and matter lose their effect (e.g., chemical reactions, combustion, nuclear explosion etc.) some of SQE is released in form of energy and move at linear speed c . If the released energy, even when it is a portion of matter and before converting to energy, move at constant speed, logically the constancy the speed of light would be possible.

As we know, in Boucher experiment (1908) that is known for his experiments on relativistic mass, if we consider the initial mass of electron m_0 and the output mass of electron m , we have;

$$m = m_0 + m_E$$

There m_E is the gained mass of energy by electron in acceleration (exerting external force). Considering the relation (2) we have:

$$E = nSQE, m_E = E/c^2 = nSQE/c^2 = nm_{SQE}$$

Thus;

$$m = m_0 + m_E = m_0 + nm_{SQE}$$

In reality is that in Boucherer experiment, an electron in acceleration gains energy and after exiting from the accelerator tunnel, because of collision with another particle or because of passing through a field that gives it negative acceleration, it loses the energy and in terms of mass it returns back to its former state same as the inverse form of Compton effect [8, 9]. One could always use this experiment to prove relativity mass, but could not explain the real interaction between force and mass with relativistic mass.

3. SQE looking in the Newton's second law and singularity

Newton's second laws in classical mechanics which the mass was given as constant value and it was defined as follows:

$$F = \frac{dP}{dt} = m \frac{dv}{dt} \quad (8)$$

By considering relativity and the speed limit of light, in order to propose the speed limit, the relation (8) was modified. Thus the relativistic mass and the interaction between force and mass were presented as follows:

$$m = \frac{m_0}{\sqrt{1 - (v/c)^2}} \quad (9)$$

$$F = \frac{dP}{dt} = \frac{d(mv)}{dt} = v \frac{dm}{dt} + m \frac{dv}{dt} \quad (10)$$

Due to the relations (9) and (10), no force could extend/transmit the object/particle's speed faster than the speed of light. It would be acceptable that the external force action is limited, but the reason is not the mass variations rather as it accented above, the reason of the speed limit should be sought in the structure of matter. According to the definition of the photon and SQE, Newton's second law could be reconsidered. By assuming an electron at moment t_1 with the mass m and the speed v_1 along an axis in the field (on an inertial frame in the gravitational or electrical field), under the force F and at the moment t_2 so its speed becomes v . Electron takes energy dE in the interval $dt = t_2 - t_1$. According to relation (5) at the moment t_1 we have:

$$P = mv_1$$

Within the time $dt = t_2 - t_1$, the electron gains energy as dE . At this time the electron momentum changes to the following value:

$$dE = nP_{SQE}c = nm_{SQE}c^2$$

At the moment t_2 one could write:

$$mv_1 + nm_{SQE}c = (m + nm_{SQE})v$$

$$v = \frac{mv_1 + nm_{SQE}c}{m + nm_{SQE}} < c \quad (11)$$

Because of:

$$v_1 < c$$

$$v = \frac{mv_1 + nm_{SQE}c}{m + nm_{SQE}} < \frac{mc + nm_{SQE}c}{m + nm_{SQE}} = c$$

As $v_1 < c$, so always $v < c$.

Here one could correlate increased mass to the gain of energy in Newton's second law, i.e.:

$$\frac{dm}{dt} = nm_{SQE} = \frac{dE}{c^2} \quad (12)$$

And Newton's second law could be rewritten as below:

$$F = \pm v \frac{dE}{c^2} + m \frac{dv}{dt} \quad (13)$$

The \pm sign in relation (13) has been marked on the increasing and decreasing state of energy (collinear or non-collinear directional variations in force and speed). The relativistic mass uses in high energies just for showing the speed limit in quantum equations while for well-known subatomic particles always $v < c$, in this order, only the given energy by particles must be considered and there no need to use the relativistic mass relation. We can better understand and explain the physical phenomena by using Newton's second law as a relation (13). Through such a view of physical and astrophysical phenomena, the explanation of the universe would be more real. According to the Sub-Quantum Energy Principle the speed value of all subatomic particles would be always constant and external force could only convert the SQE 's linear motions to nonlinear motions and vice versa. The speed of the created particles is a function of the internal interaction and the mechanism of creation of subatomic particles, and the external forces that are exerted on them. Thus light speed is constant in vacuum but it changes in air or water and as soon as it enters vacuum it travels at former constant speed. Moreover, concerning the speed of other subatomic particles, the reason behind the speed is a function of the internal interaction of the particles and the interaction among the SQE 's within the structure of those particles. The relation

(13) is the new revision of Newton's second law. According to the concepts and explanations in this section, we can consider the infinite expressed that were raised in the introduction.

Since General Relativity (GR) came into being, the scientific community has had various opportunities to verify that it gives a viable description of phenomena that include strong gravitational fields and relativistic velocities. Its experimental basis once consisting of the three classical GR effects (perihelion precession, deflection of light and red shift) has recently acquired one of its crucial contributions – the Cosmological Standard Model (CSM) of the visible Universe. Extrapolating this CSM to the past leads to one of the main features of GR – singularities [10]. At the center of a black hole as described by general relativity lies a gravitational singularity, a region where the space-time curvature becomes infinite. For a non-rotating black hole, this region takes the shape of a single point and for a rotating black hole; it is smeared out to form a ring singularity lying in the plane of rotation. In both cases, the singular region has zero volume. It can also be shown that the singular region contains all the mass of the black hole solution. The singular region can thus be thought of as having infinite density.

In this case to the best explanation of physical phenomena, we should study and survey the increasing mass effect on the large amount of force and also the force greatest effect on *SQE* to better explanation of physical phenomena.

According to the definition of *SQE*, relative to the inertial system we have:

$$(V_{SQE})_x + (V_{SQE})_y + (V_{SQE})_z = const \quad (14)$$

Acting the external force on *SQE* in the relation (3) we will get:

$$(a_{SQE})_x + (a_{SQE})_y + (a_{SQE})_z = 0 \quad (15)$$

Where $(a_{SQE})_x$, $(a_{SQE})_y$ and $(a_{SQE})_z$ are linear acceleration on the axes x , y and z .

The acceleration on each axis is associated with reducing acceleration on the other axes, i.e., $(a_{SQE})_x = -(a_{SQE})_y = -(a_{SQE})_z$ likewise for other acceleration components. We conclude from relations (14) and (15) that each *SQE* with its own inherent energy always moves with constant speed V_{SQE} , i.e., the external force was acted on each particle/object, just can convert the transmission speed of its *SQEs* to the non-transmission speeds like spin or rotation around itself or vice versa. In the inertial system we show v_{SQE} as the total transmission speeds rate and s_{SQE} the total non-transmission speeds rate of a *SQE*, so will always have:

$$v_{SQE} + s_{SQE} = V_{SQE} \quad (16)$$

Thus, according to the direction of external force which was affected on a particle/object, the total non-transmission speeds rate is converted to the transmission speeds or to the inverse. The effects of External force on *SQEs*, can be divided into two categories: The first one is the transmission external

forces F_{Ev} and the second one is the non-transmission external forces F_{Es} . F_{Ev} - Forces are converting the non-transmission speeds to the transmission speeds. According to the relation (12), we are applying the force F_{Ev} to a SQE , so in a similar way applying to the all $SQEs$ constituents of each particle/object. The energy of each SQE is constant i.e. $dE = 0$, using the new revision of Newton's second law (relation (13)), we get:

$$F_{Ev} = m_{SQE} \frac{dv}{dt} \Rightarrow dv = \frac{F_{Ev}}{m_{SQE}} dt$$

Assuming the initial transmission speed of SQE equals zero ($SQEs$ have not transmission speed in relation (16)), we take the integral over the above differential equation:

$$\int_0^{V_{SQE}} dv = \frac{1}{m_{SQE}} \int_0^t F_{Ev} dt = V_{SQE} \Rightarrow$$

$$\int_0^t F_{Ev} dt = m_{SQE} \cdot V_{SQE} \quad (17)$$

When the transmission speed of SQE reach V_{SQE} , the force F_{Ev} does not effect on the speed value of SQE and it only can freeze the direction of motion and F_{Es} - forces are converting the transmission speeds to the non-transmission speeds. Actually, the torque is applied on $SQEs$ by effecting of the forces F_{Es} , because the linear motion cannot be turned into the rotational motion without applying torque. By affecting this torque, the non-transmission speeds of $SQEs$ will increase or SQE will rotate around itself. With attention to details of the relation (17), when speed gets $v_{SQE} = 0$, the speed components s_{SQE} will be reached the highest value $s_{SQE} = V_{SQE}$. It should be noted that in a real environment (the Earth, stars, or the space between the stars), complex (set of) forces F_{Ev} and F_{Es} are acted on a SQE and each SQE will be got transmission and non-transmission speeds. Now we can define an absolute black hole. But before explanations, it is necessary to describe a few terms: if a particle/object affected when a force F_{Ev} acts on it, so the linear speed of its $SQEs$ will be V_{SQE} and we say that the object has sub-quantum divergence. There is $v_{SQE} = V_{SQE}$ in the sub-quantum divergence (relations (16)), if a particle/object affected when a force F_{Es} , acts on it, so the non-transmission speed of its $SQEs$ will be V_{SQE} and we say that the object has sub-quantum convergence. There is $s_{SQE} = V_{SQE}$ in the sub-quantum convergence (relations 17), if a particle/object falls down into the black hole, it will be

involved in sub-quantum divergence before reaching the surface of the black hole, in this situation the black hole is called an absolute black hole, and when on its surface the limited speed is $V_{SQE} > c$, this point is called significant point.

Consider the absolute black hole swallowing more matter; its mass and thus its gravitational field intensity will be increase [11, 12]. By increasing the mass, volume is reducing, its constituent *SQEs* are condensed and its transitional space will be limited (such as a capsule filled with the gas pressure, gas volume is reduced and the gas molecules have less space to move). As the amount of v_{SQE} is reduced, also the distance between *SQEs* become less. We assume in the vicinity of a *SQE*, k -numbers of *SQE* are located at distances $d_j, j = 1, 2, 3, \dots, k$. We show the average distance between each *SQE* till adjacent *SQEs* inside of all black holes by d . After increasing the density, the average distance (d) between *SQEs* go towards zero and they are scattered around. Due to collision with each other the absolute black hole will be into the explosion and decay sates (Like discs at a time when they are colliding with each other). It is possible that an explosion occurred in a small area (smaller than the mass of absolute black hole) by reducing distance between *SQEs* and their scattering inside the absolute black hole or even ordinary black hole. This situation can be controlled and subsided by gravity of the black holes. But in the absolute black hole who is ready to explode (high density); collisions between *SQEs* are so broaden and intensive therefore the gravity has no ability to deal with the explosion and decay.

An absolute black hole with very high density under two followed conditions reaches the singularity state, when its constituent *SQEs* reach sub-quantum convergence state i.e. $s_{SQE} = V_{SQE}$ and the average distance d between *SQEs* reaches zero due to the gravitational pressure. Once the speed of *SQEs* reach $s_{SQE} = V_{SQE}$, the average distance d goes to zero due to intensive collision. They are scattered around and these chain scattering are spread everywhere inside the absolute black hole and therefore the singularity is occurred. The density is very high in the singularity state, but not infinite. In addition, the volume does not reach zero, but the average the distance d between *SQEs* reach zero. Given above descriptions can easily explain counteracting Newton's second law and gravity. According to the relation (12), when an object falls into the absolute black hole, the force F_{Ev} is the gravitational force. While the object falls down, the energy increase and the force by maximum acting on the object will be changed non-linear speed of *SQEs* to linear speed, i.e. $v_{SQE} = V_{SQE} > c$.

Non-transmission force F_{Es} also is the gravitational force in the singularity and converting the non-transmission speed of *SQEs* to $s_{SQE} = V_{SQE}$. The average distance d attaining to zero, it is the major acts of force F_{Es} on the object. When the distance d reaches zero, *SQEs* will be scattered together and not follow F_{Es} . The absolute black hole will be collapsed after collisions of *SQEs* with each other. *SQEs* are

scattered around with a maximum transmission speed V_{SQE} , then particles and objects are formed as the same situation that occurred in the Big Bang by re-coupling *SQEs*, (re-convergence quanta of energy). Given the above themes, there are three basic limitations: transmission speed, non-transmission speed and density that they are the reason of creation the world and all physical phenomena existing in it, and we can describe all aspects of physics as follows:

1) *Classical Mechanics*: A massive body can continue to grow by absorbing mass from its surroundings. Also, Gravity is described as an attractive force between masses. In CM, absolute time and space respectively are independent aspects of objective reality.

2) *Quantum Mechanics*: Quantum mechanics is based on uncertainty and probability. According to these laws, elementary particles are not the infinitesimally. The occurrence of quantum mechanical singularities in certain spherically symmetric and cylindrically symmetric (including infinite line mass) space times is considered [13, 14].

3) *General Relativity*: At a singularity, space and time cease to exist as we know them. Thus the usual laws of physics break down near such a singularity [15]. So it's not really possible to envision something with infinite density and zero volume. In the SR and GR, time dilation is an actual difference of elapsed time between two events as measured by observers either moving relative to each other or differently situated from gravitational masses.

4) *Sub Quantum Energy*: Everything is made of *SQEs*, relations (2) and (3). A *SQE* is not the infinitesimally. *SQE* has volume and non-zero rest mass. We considered to interactions between a *SQE* and external force that applied on *SQE*, (relations (16) and (17)), also see Sub-quantum Divergence Sub-quantum convergence). In singularity of an absolute black, gravity force changes of attractive force to repulsive force. The time is not included *SQEs*. And each physical existence is a clock and the time is a name that we use for the ticking clock

According to special relativity as we know; a clock in a moving frame will be seen to running slow [16]. The time T_0 always is shortest as measured in its rest frame T , so;

$$T_0 = T \sqrt{1 - \frac{v^2}{c^2}} \quad (18)$$

By considering an arbitrary physical object (photons, atoms, trees, animals, stars,... and even the world) that here this object is denominated as *Existence (Ex)*; “What really can be observed by the *SQE* observer who exists inside the *Ex* structure?”

By the *SQE* observer, some of *SQEs* in interaction with each other create the *Ex* and influenced by internal or external factors were scattered and so there is no *Ex* but *SQEs* exist now, and they are forming new *Exs*. Compare this example with your own: You and others are invited to a conference. The conference is started and finished. You with other participants join the conference or with other persons attend a dinner party. The conference and the dinner party are an *Ex* therefore each *Ex* can be considered as a clock. each word that was expressed in the conference by the speaker is ticking of a clock and in the dinner party every moving, speaking or eating a piece of food is ticking of a clock that we marked it as “*dinner*”.

The ticking of these clocks is not regular and exact as the atomic clock, but really each clock works regular and accurate or not?! Have you ever participated in such configurations of clocks (Ex) yet? All these clocks were disintegrated, but you're still here and you can participate in another new configuration of clocks.

Now, we return to the sub-quantum topic. Your energy is not constant, but the SQE s energy is constant and they always move with constant speed $|V_{SQE}| > c$. According to relations (18) it can be easily concluded that the time is not included SQE s while each Ex has a beginning and an end. Each Ex is a clock and if compare them with each other, some of them running faster, slower or they work more accurate. But running clock faster or slower is affected by the physical conditions such as speed and intensity of gravity so can change clock ticking towards each other. Humans as an Ex or clock can be observed and measured the difference between other clocks ticking. Due to a natural need to survive the Human's attention and sensitivity to duration of life, it is made to imagine the time as independent physical inventory or Ex . While only a few hours (clock) are in the world and the human is selected the "time" for all clock ticking. In other words, contrary to everyone and especially the physicists, no moment of lifetime of the world's constituent particles has been elapsed.

4. Conclusion

At the beginning of the 20th century, Newton's second law was corrected considering the limit speed c and the relativistic mass. At that time there has not been a clear understanding of the subatomic particles and basically there was little research in high energy physics. Moreover, the approach of relativity toward the physical phenomena is hyper structural and explains the observations of the observer while there is little consideration to the intrinsic entity of the phenomena. However, in this paper, through various arguments and investigation of some physical phenomena, it has been attempted to show the necessity of reviewing Newton's second law. Today Physics literature faces numerous problems and questions that without considering the internal structure of the particles, they would remain unanswered. Moreover, the classical definition of energy that defines energy as the ability to do work, could not explain the interaction among the particle in high energies. The true understanding of physical entity of energy and the structure of photon, enable us to understand the structure of matter. Moreover, Newton's second law is the only relation that shows the interaction between force and matter. This equation has the sufficient efficiency to explain and investigate physical phenomena, when it would be formulated based on the natural reality of matter and the effect of force on the matter. The reality is that the external force, no way and under any physical condition, could not change the speed value and it only could convert the linear motion of the constituting particles of matter and energy to the nonlinear motion and vice versa. Moreover, one could explain the expansion of the universe better and more real through reviewing Newton's second law.

Due to needing new approaches in solving physics problems, we have tried using the relativity to explain sub-quantum particles in the new sub-quantum space and through them analyzed and described the physical phenomena by intervening classical mechanics in this article. The limitations of Newton's second law and gravity were surveyed and the transformation of a black hole to the absolute black hole was explained. We described the singularity in the explosion state of an absolute black hole with regards to $|V_{SQE}| > |c|$. It is very well consistent with the inflation theory. In addition, we showed that how we can

use the sub-quantum space to describe nature of time in order to understand better the nature of space-time. With a detailed look at the sub-quantum space, we can explain the relationship between speed and spontaneous symmetry breaking, when the particles linear speed is reduced, physical symmetry, one after the other is broken spontaneously.

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