Fundamental Particle and a New Approach to the Expansion of the Universe

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Abstract

In this study, the existence of a new subatomic particle called "fundamental particle" and the structure of primary formation matter remnants like dark matter, dark energy etc. are associated with the structure of fundamental particle and their effect to the expansion of the universe is discussed. The size of this fundamental particle is calculated within some certain limit values. Based on the structure of fundamental particle, a new approach is shown to the expansion of the universe.

Keywords: universe, cold matter, hot matter, expand, dark energy, white energy, particle, astrophysicists

1. Introduction

Dark matter and dark enegry are names given to the invisible matter and energy, which are claimed to cause the universe to expand in various opinions and theories. It is claimed by many astrophysicists and theoreticians that the matter and energy cause the universe to expand in an accelerated manner and the Hubble constant is an example of this fact. There are various opinions and theories, which argue that each matter, which enters to the influence area of the dark matter and dark energy, attracts every kind of mass because of the magnitude of attraction force. A real observation result regarding the existence of the dark matter, dark energy and black holes, which can be different forms of the matter and energy, is yet to be obtained [1-11]. However, events will be enlightened as we find the traces, which we consider to be the remnants of the preceding events [12-16].

Miscellaneous ideas, opinions, comments and theories regarding the formation of the universe, structure and formation of cosmic objects like black matter, black hole, white hole, dark energy and the expansion of the universe exist in the sources [17-34]. While these theories are adequate to shed light on some points regarding the structure of the universe, they are unable to clarify some certain points about this matter. These cosmic objects may be parts of a whole. We are yet to know which one of these is the absolute true. Because we do not have an opportunity to carry out experiments. In accordance with the latest observations, it is claimed that unusual informations, which can invalidate many theories on galaxy formation, were obtained [35].

2. The State of the Universe

It is very difficult to tell the absolute truths about the universe without finding answers to the simple questions about the universe. For instance, how much will the alleged dark matter and dark energy grow and how does its real mass increase? What is the real influence of these two matters in the expansion of the universe? What is the ultimate critical expansion value for the universe? Today, the answers of these questions are yet to be known. For this reason, it is necessary to regard evaluations made on this matter as only opinions. If we are to continue to ask simple questions about the universe; will the universe collapse into itself when it completes to expand to the adequate extent? Or will it split up and cause to the formation of splitted universes? Or will it cause to the formation of new universes? The answers of these questions are yet to be known as well.

According to our opinions, the formation of folded universes is possible if the universe splits up. The existence of these folded universes is told in the Holy Scriptures in an indirect manner. But this situation seems very difficult to happen considering the existing physics laws. But it is not possible for us to tell that this situation can never happen. If we accept the universe as a single whole, the formation of splitted universes seems more realistic. To make a definition of the splitted universe, think about a vast island on an ocean. A massive earthquake splits up this island and causes to the spread of smaller islands all over the oceans thereby leaving any connection among those smaller islands. We define these small islands as "splitted universes". The formation of splitted universes seems more reasonable than the formation of folded universes. Another opinion is that the universe will collapse into itself and form a single mass. As a result of a new explosion caused by its internal dynamics, this mass will disperse around and lead to the formation of a universe similar to that we live live.

In such a situation, the simple question is that how many times has the universe collapsed up until today? If this collapsing process is to happen, what will be the sequence of this latest collapse together with all preceding collapses? In such a situation, formation and physical form of the universe may be in a form other than the form of the known universe. There exist different opinions regarding the structure, attraction and state of the black holes [9-11]. According to some opinions, black holes are the concentration of negative vacum energy, which swallows matter, and according to some others, these may be negative vacum pressure. Contrary to this, white holes are claimed to create matter.

In such a situation with a simple approach, the formation of dark matter, white matter, black hole, white hole and dark energy, white energy pairs seems more reasonable. On the NASA webpage, it is expressed that hot cosmic microwave background and cold cosmic microwave background were observed and these can support the formation of pairs mentioned above. Because, if we comment on the universe to be a whole system, then the formation of pairs given above is an obligation. In this matching, we are on the opinion that opposite pairs function in an opposite manner. For instance, imbalance resulting from the dark energy should be balanced by the white energy. Thus, the existence of the white energy is a necessity. We are on the opinion that the existence of it is quite reasonable. Besides, there should be a relationship between these opposite pairs. Otherwise, it is not possible for universe to be in order. It is not compatible with the dynamic system structure of the universe. Then what is the relationship between these opposite pairs? This relationship is a very critical question regarding the formation and expansion of the universe. Within the framework of a simple logical approach, if the black holes swallow matter, then is not it necessary for white holes to create matter? In other words, matter should squirt. If there is dark radiation in the dark matter, then there should be white radiation in the white matter. In addition, the existence of cold dark matter, cold white matter, cold dark energy, cold white energy, cold black hole, cold white hole and their opposites is possible. Only in such a situation can the system maintain its balance.

Even if the Big Bang explosion is widely accepted regarding the formation of the universe in the science world, it is expressed in sources [30-31] and on NASA webpage that there are some predicaments in itself. If we assume that the big bang explosion really occured, then there are various opinions, ideas and publications which argue that the speed of matter particles was between 10^{30}km/per second and 10^{99}km/per second at the first moment of the explosion. Even the least speed of these particles is much more bigger than the velocity of light. How come such speedy particles turned from energy into the matter? Another question, which the science world is unable to answer, is how energy turns into matter. An answer to this question is being sought even today. None of the existing theories is able to clarify this question. Our answer to this question is; mass gets smaller as it accelerates.

Mass is squeezed and its density increases. The velocity of mass is in direct proportion to the squeeze in the volume of mass. As the mass slows down, the volume of the mass starts to expand again in proportion to the velocity. As the mass decelerates because of various reasons, it continues to expand and the volume of the mass reaches to the state before it started accelerating. Thus, what happens here is not transition from mass to energy, what happens here is volume contraction or mass-volume exchange resulting from the structure of matter? The temperature of the universe at the first moment of the explosion changed between $1x10^{12}$K - $1x10^{32}$K according to various studies [17]. How did gases or masses with such high assummed temperatures get cool? There is a need for an environment to cool high temperature in an explosion. It is possible that new masses appeared to cool high temperature in the big bang. Otherwise, the universe would not have become cold. What is the system, which cools the universe? What is this cosmic mass formation? If it is cold, there must be a realistic explanation for it. We are yet to know the answer of this reasonable question.

In addition to this, there should exist dark energy and white energy. If these are true, there should exist white matter, which is the pair the dark matter. In addition to this, there should exist cold white matter, cold white energy. The system should be cooled on one hand while it gets warm on the other hand. The system can only be balanced in this way. Schwarzchid [33] argues the existence of white holes in his theories. What is deficient here is the lack of the white matter. If the universe is a whole system, then there is a need for balancing mass and forces, which balances this system to some extent. I must clearly state here that the universe is never a stable system. If the universe was to be a stable system when we consider it in system dynamics, then there would not happen any change in the universe and it would never expand. The universe would have maintained its primary formation size. However, the universe is expanding gradually. We are on the opinion that the energy which enables the universe to expand results from non-linear systems. This energy makes the universe a dynamic system and the universe is constantly changing. In this way, the universe maintains its dynamism.

What is the source of this energy, which causes the universe to expand? The answer of this reasonable question is yet to be known. Does only energy cause the universe to expand? Or else what is the effect of mass in the expansion of the universe? How do new masses form in this expansion process? What is the effect of new mass in the expansion? If there are new masses, what is the source of these new masses? As long as the answers of these reasonable questions are not found, the absolute truth can not be told regarding the expansion of the universe and even its primary formation. There are many opinions and theories regarding the expansion of the universe. Most of these theories are accepted in the science world while many opinions are excluded. Among the excluded opinions, there may be some information, which can lead us to the right answer. We are on the opinion that the mass of the universe was a very small matter of monotype particles at the very beginning or in the big bang explosion. During the explosion, this particle splitted and dispersed around swiftly in a high density, low density manner. It is a hot cloud of particles. This particle mass possessed energy but it was not energy itself. But its volume squeezed and its density increased because of the high velocity.

This particle slowed down as its energy decreased as the time passed. This slow down occured in stages. When this fundamental particle slowed down and cooled to some extent, these fundamental particles, combining together, formed a particle with a bigger mass. This particle combined and formed particles with bigger mass. Every formation in each stage was never in the structure of fundamental particle, each formation occured in a different structure. Formation of these structures leads us to the structure of subatomic particles. Combining together, subatomic particles formed an upper structure. This formation completed its formation by forming the structure of the matter. Thus, atomic structure emerged. All these processes happened in stages. The existing structure of the matter is the final stage of this formation. For this reason, it has a lower energy structure. It is easier to split it up. But when it comes closer to the subatomic particles, it can break its binding energy by giving more energy to split up and the particle becomes free. For this reason, it can split up by giving more energy.

In every particle which forms matter, there upper structures of fundamental particles which are the remnants of the primary explosion. These subatomic structures and particles appear when the conditions are suitable. This fundamental particle possesses particle freedom. Thus, it immediately completes the diminishing particle in the structure of matter. So, the atomic system constantly remains in the same structure. The quality of fundamental particle never changes under the earth and universe conditions. Besides, for it is fundamental particle, it has a very high energy level. Because of its high energy level, conditions never become suitable in such a level to affect this particle. A large part of this particle, which emerged in the big bang, has maintained its primary state.
It is named dark matter or dark energy. We name it fundamental particle mass cumulant.

These exist together in a very loose manner in the universe. We are on the opinion that these exist in a state looser than fluids while denser than gases. These fundamental particle remnants can swallow every kind of matter and energy for they possess a very high energy, mass density and attraction force. They separate the matter they swallow into fundamental particles because of the high energy level. Thus, the mass of the fundamental particle remnant grows up. Its energy increases. Its field of attraction and acceleration increase as well. In addition, its dynamic structure changes. Because of its dynamic structure, it expands with its increasing acceleration. We are on the opinion that it is the main reason for the expansion of the universe.

Physical and chemical events in the universe occur in the element dimension of matters. However, events in the big bang occured at the “fundamental particle” level of matter. For this reason, binding energy is very high. In other words, binding energy grows as we go to the smaller particles of matter. For this fundamental particle has a very high binding energy, energy incomparable with classic fusion emerges. We are on the opinion that the sun generates energy through the combination of particles of supra-fundamental particle. We think that it is the sun’s energy generating system. We are on the opinion that fundamental particles vibrate at a very high frequency. Because energy-frequency cycle of known units corresponds to high frequencies. Theoretically, it can vibrate up to the frequency of $2{,}9x10^{94}$Hz. Technologically, if semi-conductor products are manufactured using this fundamental particle, we are on the opinion that semi-conductor electronic circuit elements which can function at very high frequencies can be manufactured. Considering the existing technology and knowledge today, however, we think that it is a very difficult, even an impossible task. If it comes true one day, it will be a breakthrough in the electronic industry. We can reach supra-fundamental particles (which are 1000 times bigger than fundamental particle). Utilizing these particles in the electronic semi-conductor industry, we can solve the problem of lacking electronic semi-conductor to function at high frequencies.

3. The Prıncıple of Fundamental Partıcle

According to our studies, there should be the remnant of mass cumulant which was left during the primary formation of the universe. We call these remnants "fundamental particle". According to our calculations, the mass of fundamental particle is $5{,}600119035\times10^{-80}\,gr$ at the temperature of $1{,}5\times10^{12}$K and $8{,}401785525\times10^{-98}\,gr$ at the temperature of $1{,}5\times10^{32}$K. According to our calculations, its energy is $1{,}2\times10^{80}\,eV$ and its size is $8{,}401785525\times10^{-66}\,cm$. We think that fundamental particle is between these two values. In NASA's images (cosmology history, WMAP image), it is expressed that there were small particles at the beginning of time. These fundamental particle exists in all atomic particles like proton, neutron, electron etc. and in the structure of all subatomic particles in standard model. These particles do not emerge under normal conditions, but these particles emerge when mass splits up. If the space is accepted to be in a homogenous structure, matter density of interstellar space and intergalactic space is full of $5{,}600119035\times10^{-71}\,gr/Km^3$ matter at the temperature of $1{,}5x10^{12}$K and $8{,}401\times10^{-89}\,gr/Km^3$ matter at the temperature of $1{,}5x10^{32}$K in fundamental particle remnant model. These two values are very different because there are various different assumptions accepted regarding to the temperature during the big bang. When unit conversion of fundamental particle remnants in the universe is carried out, it seems that this temperature may be $-1{,}5\cdot10^{42}K$. In such a situation, the existence of cold areas or cold galaxies seems possible. We do not know physical properties of matter at the temperature of $-1{,}5\cdot10^{42}K$. For this reason, obseving cold areas of the universe may not be possible with today's technology. We suggest that cold galaxies and cold matters should be seeked in the universe. We argued the structure of fundamental particle and light in our previous study [36].

We define the energy of supra-fundamental particles as in the following:

$$E = M V^2 e F_1 F_2 F_3$$

In this equation, M is defined as mass of subatomic particle and F_1,F_2,F_3 are defined as three dimensional, unequal functioning frequencies of particle. Here, e symbolizes mass binding energy of electron volt particle and V is defined as velocity, this velocity is defined as a very close velocity to the velocity at the beginning conditions. Studies regarding the existence of masses moving faster than light (tachyons) are given in the sources [37-39]. According to unit conversions carried out regarding some values of fundamental particle, frequency of fundamental particle corresponds to $2{,}901x10^{94}$ Hz, its temperature corresponds to $1{,}393x10^{84}$K, its energy corresponds to $1{,}922x10^{61}$ J and its mass corresponds to $2{,}139x\ 10^{44}$ kg [40]. It seems impossible to measure the physical properties of fundamental particle using the existing technology.

Conclusıon

In this study, we are on the opinion regarding the structure of the universe and matter that there should be a smallest fundamental structure that we call "fundamental particle". This particle possesses fundamental particle freedom. It means that this particle can transform into every deficient part in each kind of matter. All sub-atomic and supra-atomic particles that form matter are formed as a result of different binding of this fundamental particle. This fundamental particle is the mass cumulants left during the primary formation of the universe. For this reason, it was formed under the primary conditions of the universe. It was not formed thereafter. This fundamental particle can only form again if the primary conditions of the universe become suitable again. Fundamental particles formed bigger particles with different structure by combining together and these different particles formed a different chain of formation.

And as a result of this chain, the atomic structure of present-day formed. We are on the opinion that these particles complete and restore the deficient parts in the atomic structure. We think that dark matter and similar matters in the universe formed out of these particles. For these particles are of very small size and of much more faster than their known velocity, it is not possible to become aware of their existence using the existing technology. We can not ignore the particles that we are not aware. In the universe, there should be the effect and remnants of fundamental particles like dark energy, dark matter, white matter, white energy, black hole, white hole, hot dark matter, cold dark matter etc. the number of which is unknown to us yet. In the course of time, their dynamic structure changes and their attraction field increases for their mass grows and their temperature changes. As a result of this process, the universe is expanding dynamically and gradually in an accelerating manner. Humankind will obtain true and real informations when they discover the boundaries of the universe.

References

Vittorio, N., Silk, J., "Fine-scale anisotropy of the cosmic microwave background in a universe dominated by cold dark matter". Astrophysical Journal, Part 2 - Letters to the Editor 285: L39–L43. doi:10.1086/184361., 1984.

Bertone, Gianfranco., Hooper, Dan., Silk, Joseph., "Particle Dark Matter: Evidence, Candidates and Constraints". Phys. Rep. 405: 279-390., 2005.

Fornengo, Nicolao., "Status and perspectives of indirect and direct dark matter searches". Adv.Space Res. 41: 2010-2018., 2008.

Bertone, G. and Hooper, D. and Silk, J. "Particle dark matter: evidence, candidates and constraints". Physics Reports 405: 279., 2004.

Sumner, Timothy J., "Experimental Searches for Dark Matter". Living Reviews in Relativity 5: 4, 2002.

Bertone, Gianfranco., Joseph Silk, Dan Hooper., "Particle Dark Matter: Evidence, Candidates and Constraints". Phys. Rep. 405: 279-390., 2005.

Arkani-Hamed, Nima., Finkbeiner, Douglas P., R. Slatyer, Tracy., and Weiner, Neal.,"A theory of dark matter" Physical Review D 79, 015014, 2009.

Albrecht, Andreas., "Report of the dark energy task force (DETF)"., University of California, Davis and 12 other authors, 2005.

Bekenstein, Jacob., "Of Gravity. Black Holes and Information", Di Renzo Editore, 2006.

Taylor, Edwin F & John A. Wheeler, Exploring black holes: introduction to general relativity, Benjammin/Cummings, 2000.

Thorne, Kip, H. Price, Richard and Douglas Alan Macdonald, "Black holes : the membrane paradigm", Yale University Press, New Heaven, 1986.

Wilson, R. W., Penzias, A. A., "Isotropy of Cosmic Background Radiation at 4080 Megahertz". *Science* 156 (3778):1100–1101, 1967.

Volonteri M., Rees M. J., "Rapid Growth of High-Redshift Black Holes",ApJ, 633, 62,Astro-ph/0506040, 2005.

Alpher, R. A., R. Herman "Reflections on early work on 'big bang' cosmology". Physics Today. pp. 24–34. August 1988.

Simon, Singh., "Big Bang: The most important scientific discovery of all time and why you need to know about it". Fourth Estate. 2004.

Srianand, Raghunathan., Petitjean, Patrick & Ledoux, Cédric., "The microwave background temperature at the redshift of 2.33771", Nature, 408, 2000.

Schneider, Peter., " ExtragalacticAstronomyand Cosmology", Spriger Verlag, 2006.

Kolb, Edward; Michael Turner., "The Early Universe". Addison-Wesley,1988.

Peacock, John., "Cosmological Physics". Cambridge University Press, 1999.

Mather, John C., Boslough, John., "The very first light: the true inside story of the scientific journey back to the dawn of the universe". New York: BasicBooks,1996.

Linde, Andrei D. "Particle Physics and Inflationary Cosmology", Harwood, Chur, 1990.

Kolb, Edward W. and Turner, Michael S. "The Early Universe," Perseus Books Group", 1993.

Peebles, Philip James Edwin, "Principles of Physical Cosmology", Princeton University Press, 1993.

Kennedy, B.K. "Retrieved on 3 July 2007 What Happened Before the Big Bang?",2007.

R. Liddle, Andrew and H. Lyth, David., "Cosmological Inflation and Large-Scale Structure", Cambridge University Press, 2000.

Dodelson, Scott., "Modern Cosmology", Academic Press, 2003.

Liddle, Andrew., "An Introduction to Modern Cosmology", John Wiley & Sons, 2003.

Mukhanov, Viatcheslav., "Physical Foundations of Cosmology", Cambridge University Press, 2005.

Caldwell, R.R., Kamionkowski, M., Weinberg, N.N. "Phantom Energy and Cosmic Doomsday". Physical Review Letters 91: 071301., 2003.

Linde, "A Inflationary Theory versus Ekpyrotic/Cyclic Scenario", arXiv:hep-th/0205259., 2002.

Guth, Alan H.," The Inflationary Universe", Addison-Wesley, Reading, 1997.

Kragh, H., "Cosmology and Controversy". Princeton (NJ): Princeton University Press.1996.

Ostriker, P. Jeremiah P., Paul, Steinhardt., "New Light on Dark Matter" Science 20 June, Vol. 300 no. 5627 pp. 1909-1913, 2003.

Brown, K., "Relativity on Reflectivity", Cambridge, London, 2009.

Van den Bosch, C. E., Remco., Gebhardt, Karl., Gültekin, Kayhan., Van de Ven., Glenn, Arjen van der Wel and L. Walsh, Jonelle., "An over-massive blackhole in the compactlenticular galaxy NGC1277" Nature 491, 729–731, 2012.

Yıldırım, Remzi., "The Division And Bending Of Green And Red Semiconductor Laser Light At The SameTime", NS, Vol:3, No:10, 2011.

Bilaniuk, George Sudarshan., "Particles beyond the Light Barrier". Physics Today, May 1969.

Bilaniuk, Deshpande, George Sudarshan., "Meta Relativity". American Journal of Physics: 718ff, 1962.

Feinberg, Gerald., "Possibility of Faster-than-light Particles", Phys. Rev. 159, 1089–1105, 1967.

http://physics.nist.gov/cuu/Constants