
Dark Matter Engineering

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Abstract: The dark matter is the product of a constructive cycle of the universe. Similar to our visible mass, our dark matter is a result of photosynthesis immediately after a big bang. The big bang Nucleosynthesis is a well-established fact in our physics (1). The author has subsequently linked gamma ray blast to our big bang(2). Based on the conservation law of mass, our galaxies must come from particles generated from a big bang, rather than from nothing. More specifically, our nucleon and sub-nuclear particles are all from photons, because the photons are the only option for linking our mass to a big bang of high energy particles! The dark matter is the first congregation of photons immediately after a big bang! The visible galaxies appear later. The mechanism behind segregation of photons with similar wavelength/frequencies plays a critical role for forming protons, neutrons, black matter and so on. It is the emulsion power that bundles photons in the emulsion soup of electrons in a particle world! What confuses people is our perception of photon – how flying particles at speed of light “settle down” and become part of emulsion soup/mass. The mass or quarks sit there orbiting rather than flying in a straight direction with speed of light. The missing link is now founded; it is “photon bonding/coupling”! –a recent remarkable discovery called Rydberg blockade by coaxing photons into bonding together to form “molecules” – a state of matter by a group led by Harvard Professor of Physics Mikhail Lukin and MIT Professor of Physics Vladan Vuletic(3). The uncoupled photon possesses pure kinetic energy, e.g. cosmic ray or solar light. The coupled photons/photosynthesis stay! E.g. an apple – contains coupled/bounded photons in a biological process called photosynthesis. There are some types of fungi, called radiotrophic fungi, are able to use melanin as a photosynthetic pigment that enables them to capture gamma rays(4) and harness the energy for growth(5). The primary objective of this study is to uncover the origin of all particles and master dark matter engineering in the discipline of basic physics.

Keywords: Particles, Photons, Photon Bonding, Dark Matters, Gamma Ray, Big Bang, Origin of Universe

1. Introduction

The particle world holds the answer for everything. Unfortunately, limited by our digging tools, everyone tumbles at quark level. Without forming any new theory beyond basic physics! The author can assure everyone that quark is originated from “settled” photons all particles share the same origin! This conclusion is supported by big bang theory, because all masses are the products from a big bang which is high energy particle/photons blast.

The linkage of a big bang to high energy particle/photons is crucial for fundamental particle study since our tools are often limited when we try to dissect those tiny little bit creatures named particles! However, all roads lead to Rome. The correct understanding of our universe origin will help us understand our particle world! If our big bang is truly a high energy particle blast, based on conservation law of mass, we can be 100% confident in pinning down photons are the most basic

building block for all particles and so on! In other words, all particles indeed have same single origin!

Unfortunately, no matter how weak a laser/light source we use, we are far from isolating a single photon in our lab where a testing “vacuum” demands absolute temperature at near zero level. It is that reason we cannot pin down anything beyond quark in experiment where absolute temperature of zero is beyond our technology. However, the tremendous slowing down of flying photons (uncoupled photons) in extreme cold medium supports the hypothesis that photons can be transformed into mass particles e.g. quark through a process called emulsion! The slowing speed of flying photons (uncoupled/unbounded) indicates losing their kinetic energy, and makes themselves more readily available for photosynthesis by emulsion in an emulsion soup.

The biological photosynthesis is another common natural

phenomenon where photons are captured and incorporated in mass. The maximum amount of photosynthesis per incident unit of energy is at a wavelength, around 650 nm (deep red). If we limit the supply of quantity of such red solar lights on chlorophyll (other words, not to overwhelm it), the lights of study will be disappeared entirely right in front of our eyes! Unfortunately, the widely used term “light absorption” is a very ambiguous word that covers the most remarkable process in particle physics! The photosynthesis of apple tree leaves contributes to apple tree weight/gravity! Apparently, the solar photons of wavelength 650 nm cannot be bounded at nuclear level or proton/neutron level of apple tree, otherwise, the different atoms will be created if proton/neutron mass number is changed by photosynthesis! The equation $\text{CO}_2 + \text{H}_2\text{O} + \text{Solar photons} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6(\text{glucose}) + \text{O}_2$ tells us there is no changing of atoms during photosynthesis. The author, therefore, can safely deduce that solar lights are bounded at sub-particle level! No matter how fancy the particles act, they are all from same origin- the photons! There is a “zoo” of particles, which may simply correspond to “zoo” of light with different wavelength/frequencies before such photons are captured. The different wavelength/frequencies a photon once owned, cannot disappear based on the conservation law of mass and energy, therefore, afford “different character” possible for particles!

In any soup of distinguished different type of mediums, the photons of similar wave length/frequencies will merge together through a well-known process called emulsion! To stable the “bounded” photon structure, also known as Neutrinos, we need electrons! On the other hand, electrons are stabled by “bounded” photon structure as well. Other words, the stable effects between them are mutual. The author’s view is supported by nuclear reaction, in which, if photon strike/disturb the neutrinos, the electrons will be excited. It is also evidenced in “Bond Softening” experiment(6)!

2. Photons, Electron and Photosynthesis or Photon Emulsion

We all love our sun, because it gives us life and keep us warm, but little we know, the sun also serves a greatest particle lab for us free of charge! There are tremendous amount of photons come out of sun, but the sun is not made of photons! The sun is mainly made of hydrogen along with other elements but photons! So, where are solar photons from? The hydrogen! According to conservation of mass, no matter can be created or destroyed, solar photons cannot come from nothing, the photons are from hydrogen, more specifically, their nucleons! This is a destructive way to prove photons are the origin for all particles. Of course, not all solar hydrogen will puff up becoming solar photons due to its enormous size with various physical conditions in the sun. However, this sun’s business is sufficient to tell us that photons can be generated from its nucleons! The author also can present you a constructive way to prove photons are the origin for all particles!

2.1. Photon Barrier

All human sensory share same physical mechanism that turns stimulus into electric current. The vision is no exception. Here is an example for our seeing a yellow apple. For a ripened yellow apple, wavelengths of about 570 to 580 nanometers bounce back. These are the wavelengths of yellow light. When you look at a yellow apple, the wavelengths of reflected light determine what color you may see. The light waves reflect off from the yellow apple and hit the light-sensitive retina at the back of your eye.

There is an inherited barrier for us to manipulate photons down to a single level. If that single photon is not reflected away from experiment mediums, and hits in human eye, no one would see it. It is also highly unlikely for human eye detects one single photon because one single photon unlikely excites light threshold and sparks electric current in human eye cells. For us to spot a light, not only we need lens to increase photons concentration, but also our eye has an impressive high light threshold, considering 6 to 7 million cones concentrated on a 0.3 millimeter spot on the retina. It requires certain quantity of photons to provoke a reaction.

It is a formidable barrier for us to manipulate a single photon, but it is not that hard for us to look into space and deduce our particles are all from one single origin, that is photon!

2.2. Photosynthesis in Space

The cosmic microwave background (CMB) is the thermal radiation left over from the “Big Bang”. It is the oldest light in the current observed universe. Moreover, the microwave photons are un-coupled and exist as free flying ray! It serves one of forever emulsion agent in space! In a sense, any mass/matter possesses different character of physics will subject to segregation emulsion in space!

Our current cosmos Gamma ray (not all of them) is from a big bang! It is partially supported by fact that the energies of gamma rays from astronomical sources range to over 10 TeV. That energy is far too large to result from radioactive decay(7). Some cosmos gamma ray are from pulsar and black hole though. However, gamma-ray pulsars and rare occurrence of gamma ray burst from black hole are very rare events in the universe. It is evidenced by recent observation: there have been only about one hundred gamma-ray pulsars identified out of about 1800 known pulsars(8). Base on observation, the sources of most GRBs are billions of light years away from Earth, implying that the explosions are both extremely energetic (a typical burst releases as much energy in a few seconds as the Sun will in its entire 10-billion-year lifetime) and extremely rare (a few per galaxy per million years). Given the facts that the universe space is infinite big and it is full of diffuse gamma radiation, it can be reasoned that the pulsars and black holes are not sufficient source for such extensive universe background gamma radiation. Secondly, the radioactive decay is not a right candidate power house for cosmos γ -ray background either. The only option left here is a big bang. The big bang provides most of those cosmos γ -ray

today. The remaining cosmos γ -ray is provided by big bang indirectly.

Apparently, the initial blast of gamma ray from a big bang will penetrate any mass that exist during big bang explosion. For any gamma ray to be trapped or coupled at any sub-nuclear level, those rays need to be slow down first! Otherwise, emulsion will not work with storming photons at speed of light! The missing link is how lights can be slow down. Now the puzzle is finally solved! At couple degrees above absolute temperature zero, the lights appear slow down significantly where emulsion stands for a chance to work! (9) Our universe space background temperature 2.7 Kelvin. It might go further down when our region of universe is ripe for next big bang, however our background temperature will never reach absolute temperature zero. (2)

The universe is a complete and enclosed system, because there is nothing existing outside universe which may interferes universe matters/energy. The conservation of mass and energy perfectly apply universe as a unit. We can safely say that universe energy and mass are constant. $E_{\text{bigbang}} = E_k + E_p$

The E_k is the sum of kinetic energy presents in the current universe. E_p is the sum of positional energy presents in the current universe. The big bang is a greatest event happened in the universe; it is an almost pure kinetic energy show. Soon after a big blast, some of its kinetic energy starts to transfer itself to the positional energy (γ ray nucleosynthesis/ photosynthesis). Some γ ray photosynthesis trapped at subatomic stage and evolves into dark matter (significant positional energy, little kinetic energy). Some γ ray nucleosynthesis goes on to form galaxies and us. Some γ ray remains free standing status and becomes cosmos background ray.(10) The vast majority of λ ray fades into cosmic microwave background.(11)

The light photons in a big bang blast provide building block for everything that possess positional energy include you and me. Apparently, light photons are not equal to proton or neutrons. But those particles are all originated from photons based on deductions of reasoning: 1. The big bang is the blast of high kinetic energy particles/ photons based on observation 2. Mass/Matters are from high energy particles/photons based on conservation law of mass(12).

2.3. Electrons, Dark Matter “Halo” and Friction

Electron apparently helps stabilize particle bonding and/or photon bonding. In an organic world, the photosynthesis is very common phenomenon, the uncoupled/unbounded photon hit chlorophyll and accessory pigments such as carotenoids and phycobilins, chemical bonding “softening” happens, electron subsequently released(13), meanwhile, plant molecule potential energy curves become distorted. The photons apparently join the particles of receiving plant molecule. It is not only supported by energy curve distortion observed from experiment, but also evidenced by weight gaining/gravity gaining from growing plants which capture large quantity of photons through their growth. Other than certain wavelengths of solar photons are preferred by most plants, we also know radiotrophic fungi, which are able to use melanin as a

photosynthetic pigment that enables them to capture gamma rays(4) and harness the energy for growth.(5) γ -ray is probably abundance in the early stage of earth while atmosphere has not developed. The organic lives must try every possible way to capture light photons to power their body engineering!

In the space, the dark matter is stable mass rich in “coupled” or “settled” high energy particles/ λ photons, its stabilization factors/electrons must be rich as well.

The author reasonably expect more activities happen among electrons within or surround dark matters, which may strike and trigger X ray. The author’s view is supported by X-ray emission observed from center of galaxies(14). On the other hand, fewer events disturb coupled λ photons, which may be unleashed and manifest as λ ray activities in dark matters(15).

The findings of λ ray burst or excessive λ ray photons in the black hole may indicate the transparency character of dark matter for λ ray or non-absorption of λ wavelength photons!

The λ ray burst mostly happens when dark matters are first formed due to its unstableness of newly formed nucleus during early stage of Big Bang nucleosynthesis. It is evidenced by recent discovery of GRB 130472A - The extremely bright gamma-ray burst occurred in a galaxy 3.7 billion light-years. Such extent of λ ray burst is becoming rarer and rarer in the mature region of post big bang era. Otherwise, the organic evolution will not be possible on earth.

As we all know, the emulsion requires initial energy input which is the big bang, throughout the time, the big bang kinetic energy declines, the emulsion will revert to the stable state of the phases comprising the emulsions (e.g. the congregation of photons, the separation of neutrons and electrons in space). In dark matter, the segregation of electrons and neutrons destabilizes dark matter physics. Fortunately, such destabilization is counter-balanced by gravitation among emulsion agents! The halo of rich electric activities (e.g. x-ray), therefore, will be expected from any dark matter of substantial size! The destabilization also affects neutrons which may unleash its bounded λ photons - excess λ photon activities!

The halo of dark matter (electron clouds) will be expected in space and our experiment lab! Such halo is a norm for any black hole in space since black hole is made from dark matters! The halo and dark matter are kept together because of gravity effects between them! In addition, the halo (electron clouds) may also serve “friction factor” when multiple black hole merge. It is evidenced by recent discovery of a “lagging” black hole in the merger of multiple black holes due to said frictions where merging of first two black holes likely made “halo” or electron clouds much thicker-greater friction for third new black hole/dark matter! Those frictions eventually will be overcome by tremendous gravity among black holes!

2.4. Dark Matter Engineering

The author has deduced dark matter is made from γ -ray photosynthesis. Since γ -ray photosynthesis is not total alien to earthlings, we do have difficult time to understand how γ -ray

photosynthesis occurs in space. The author is very pleased to find out recent remarkable discovery called Rydberg blockade by coaxing photons into bonding together to form “molecules” – a state of matter by a group led by Harvard Professor of Physics Mikhail Lukin and MIT Professor of Physics Vladan Vuletic.^③

The European Particle/Large hadron Collider is the first step for attempting to create dark matter by colliding two photons at near speed of light. In the space, the continuing of merging galaxies, leave bigger and bigger space blobs with extremely low temperature which is a cycling process of preparing next big bang. Once a big bang occurs, the high energy particles of such big bang most likely encounter many regions of extremely low temperature in space where dark matter start to form. The Lukin and Vuletic’s experiment solved a critical part of puzzle how “top speed” photons “slow down” affording a possibility for emulsion process to do its job transferring their kinetic energy to positional energy!

The big bang blast is most likely high energy particle e.g. λ ray, it is not electrons. In the immediate post bang “soup”, the space emulsion makes λ photons segregation possible in the soup of microwave inferred photons and clouds of electrons. The initial space emulsion agents may not be structured as stable as the ones in the later stage of universe evolution. The more stable structure develops when multiple nuclear decays among black holes happen in a little later stage of mass evolution!

The emulsion force that bundles “frozen” λ photons against microwave inferred photons and clouds of electrons is weak, therefore, nickname those little creatures as weakly interacting massive particles is deemed appropriate!

In the lab, Nuclear emulsion was first discovered by Marietta Blau and Hertha Wambacher In 1937. The author reasonably believes the dark matter can be formed in a lab setting where appropriate medium or photographic plate available as a background/emulsion soup. The targeting photons must be λ ray type! The temperature must mimic deep space temperature (2.7 kelvin or lower). The author also reasonably believes the electrons must exist in the medium for stabilizing newly formed dark matter in lab!

3. Universe Creation, Methuselah Star HD 140283

The author applaud international collaboration for the Dark Energy Survey, if basic physics works for deep space, during big bang preparing stage, the map should demonstrate the “greater and greater” concentration of “matters or dark matters” as mass evolves or timing by humans, a phenomenon is similar to “oil water emulsion”. Meantime, we will see larger and larger space blobs with little mass and extremely low temperature. It is evidenced by newly discovered primordial blob which formed in a prior circle of big bang preparing stage. Since the space is never void during or before any big bang, it is unsurprisingly to see some “older” celestial mass which is older than a current observed universe! It is supported by

discovery of Methuselah star, HD 140283 which is “older” than our current universe! It is not paradox, it is another perfect evidence supports author’s universe model- one universe, endless cycles in a realm of gravity and emulsion!

While universe expansion is accelerated, the frequency of merging galaxies/black hole may drop. The larger space blobs means greater distance to overcome for galaxies/black hole to meet. However, the size of galaxies/black hole will be significant larger than the ones at early stage of universe development! The mature stage of galaxies may be significantly dimmer after large amounts of big bang photons (“visible” uncoupled ray) are bundled into positional energy to form galaxies mass (“coupled” photons). The larger size of galaxies/black hole make universe expanding acceleration possible due to larger gravity power!

3.1. Emulsion and Modified Gravitation

The universe is never a place of completely “void”. It is filled up with matters of two kinds – “uncoupled” and “coupled” mass at different concentration throughout space. The “uncoupled” mass e.g. cosmic ray corresponding to mostly “kinetic energy”; the “coupled” mass corresponding to mostly “positional energy”, those “coupled” and “uncoupled” mass serve distinguish different nature of mediums where “emulsion” comes to play. Therefore, the gathering of bigger and bigger mass is driven by two forces! – the gravity and emulsion. The author believes emulsion is most likely playing a bigger role for dark matter forming initially! rather than a result of simple collision of photons.

The emulsion plays a key role for universe galaxies formation and nucleon formation. The gravity power is much more significant comparing to emulsion power, especially in the late stage of universe development, when larger and larger galaxies/black holes appear! The emulsion force sometimes works along with gravitation power, sometimes it will work against gravitation power. The emulsion power maybe Negligible when Newton calculated the apple velocity with gravity in his garden. Apparently, the apple is subject to emulsion force as well; because the physics character of apple is differ from air. However, it is negligible because the emulsion force is trivial!

The story might not be true, when we look at a star/planet with trillion and trillion size/mass of Newton’s apple, the emulsion force between a gigantic star against cosmic background photons may not be trivial! The modified gravitation may become necessary. Same rule may also apply calculation of orbiting status for a gigantic celestial mass!

3.2. Gravitation, Space-Time, Gravitational Wave

Any particles that are coupled /congregated will manifest gravitational effects^②. The simple example is an apple, thru photosynthesis; the big apple that contains large quantities of coupled photons along with new electrons may manifest gravitation effects! The solar light can be, therefore, considered as gravitational wave. However, the gravitational wave is misleading concept because it implies that there are

non-gravitational wave/particles exist. As I described earlier, all particles include electrons and photons can manifest gravitation of significance! if they are coupled/congregated! There are no such things of non-gravitational wave!

Space is just void where matter floats, and time is a history record of progress of matter evolution. The Space-time is not matter; it can never be “rubbed” or “rippled”!

Emulsion is a well-studied natural phenomenon in basic physics. The earth is part of universe! The law of physics works for earth; it will work for the rest of universe! If there are laws of physics “only” work in deep space. The author is afraid to say some genius of icon may not understand basic information from that apple once hanging over young Newton’s head.

The common sense of earthlings, however, tells the author that the space emulsion force may modify gravity force in space or anywhere, where stars, planets, black holes and /or particles are subject to “non-similar” matter in a non-void space -emulsion soup!

3.3. Big Bang Nucleosynthesis, Particle Emulsion, WIMPs, Radiation

The big bang Nucleosynthesis starts with merging /coupling of big blast high energy particles/photons in the soup of electrons (initial big blast kinetic energy along with emulsion force) → protons and neutrons/primordial nucleons formation (some big blast kinetic energy transfer to positional or orbiting energy also known as gravity) → unstable nucleus decay/radioactive decay → dark matter formation/stabilization+ λ ray bursts → mass gathering due to dark matter gravity → visible galaxy formation.

The dark matter may go thru “initial formation” then “stabilization” with radioactive decay process:

$\text{Ve} + \text{p}^+ \rightarrow \text{n}^0 + \text{e}^+$ (Cowan-Reines neutrino experiment) dictates beta negative decay reacted with protons to produce neutrons! and positrons which quickly combine with electrons, releasing gamma rays!

The author agrees with the increasing consensus among scientific community: Dark Matter is mass of neutrons with electron cloud that stabilize neutrons. The stable dark matter/black hole has signature “x” ray or “ λ ” photon excess. The initial “unstable” dark matter/black hole may have phenomenal λ ray burst! The λ ray burst, however, has dramatically reduced when universe progress to a more stable stage! So is the rate of galaxies/dark matter merge (decreasing), while size of galaxies/dark matters, however, are increasingly becoming gigantic when space emulsion and gravity continue drive our current galaxies’ migration.

3.4. Matter, Anti-Matter, Conception Black Hole

It was 1756, Mikhail Lomonosov discovered the law of mass conservation by experiments, and came to the conclusion that phlogiston theory is incorrect. The concept of mass conservation is widely used in many fields (limited in scientific aspect of human life) such as chemistry, mechanics, and fluid dynamics. However, the confusion of mass law

persists well into modern time. As author described earlier, when uncoupled/visible photons become bounded/coupled, “visible” photons will disappear in front of our eyes, but it doesn’t mean they are vanished! The perception of “canceling” effects among matter and anti-matter implies “vanish”. Such perception may validate a magician’s work or trigger a mass worship, but it serves an intellectual black hole in physics! Those misleading concepts will gulp unlimited generations of bright mind and yield no returns in a scientific world.

4. Space Exploration and Computer Simulation

There are two ways to learn flying. The airplane flight simulator or real plane will all serve its purpose. Once we understand the makeup of all mass and the circle of universe, we will be able to quantify the possibilities by using computer to simulate the foreign stars/planets/galaxies/big bangs and so on. We can use computer to simulate all possibilities of organic matter evolution in different environment/planets. Instead of reaching out to visit aliens, we can create aliens in our big screen and watch them from our living room, a favorite way for travelling to many “home-bounded” tourists in today’s world! Our lab, however, should be able to create miniature version of pre-big bang dark matter mass, big bang, dark matter formation, galaxy formation etc.

5. Results Analysis

The emulsion is ubiquitously phenomenon, the mass love to segregate based on its inherited similarity. Since everything is made from atoms/nucleus/electrons, it is not surprised to know that those little creatures share same temper as their bigger brothers e.g. oil and water. In a lab, Nuclear emulsions have been well studied and used to investigate fast charged particles like nucleons or mesons. Follow the same foot step, the author further postulate that the emulsions also exist for sub-nucleon particle, more specifically, photons! The photons distinguish themselves with various wave length and frequency. The similar wave length/frequency photons may very well segregate in the broth of electron or photons with different wave length/frequencies!

The particle emulsions are only inches away from nuclear emulsions! Once we master particle emulsions, we will be able to manufacture dark matter in our lab! The practical application of making dark matter is enormous! Not only it will help us understand the origin of all particles, the origin of universe, but also it will re-shape our medicine, energy industry and military operation!

The universe is a complete and enclosed system, because there is nothing existing outside universe which may interferes universe matters/energy. The conservation of mass and energy perfectly apply universe as a unit. We can safely say that universe energy and mass are constant. $E_{\text{bigbang}} = E_k + E_p$

The E_k is the sum of kinetic energy presents in the current universe. E_p is the sum of positional energy presents in the

current universe. The big bang is a greatest event happened in the universe; it is an almost pure kinetic energy show. Soon after a big blast, some of its kinetic energy starts to transfer itself to the positional energy (γ ray nucleosynthesis/photosynthesis). It serves a practical basis for our reasoning that all particles are from same origin- photons! It is this reason, therefore, the author recommend use photons as emulsion agent in particle emulsion experiment!

6. Discussion

We may see a “zoo” of particles, but they are most likely all originated from photons based on universe observation in author’s universe model. The mechanic of manufacturing all neutrons from photons is “emulsion”! The un-coupled photons/ray do not have gravitation effect, therefore, gravitation does not play a role in initial photon bonding! Once photon bonding occurs thru emulsion segregation, the gravity effects appear, bounded/coupled photons, therefore, attract electrons which will further stabilize photon bounding! The striking of a new photon on bounded photons will destabilize the harmony between stabilized coupled photons and their mates-electrons. The electrons will be excited and jump, which further destabilize “coupled photon” until one photon will be unleashed from its bonding and fly out as a single ray/photon!

The traditional way of dissect particles may encounter forbidding technical difficulty by isolating single photon for experiment. The recent discovery of photon bonding phenomenon in inorganic lab afford “producing our own dark matter” possible on earth! And make “photon emulsion” possible as well!

Once we understand the makeup of all mass and the circle of universe, we will be able to quantify the possibilities by using computer to simulate the foreign stars/planets/galaxies/big bangs and so on. We can use computer to simulate all possibilities of organic matter evolution in different exotic environment/planets.

The author promotes computer space exploration along with physical exploration in deep space.

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