

# The Unification of Particle and Energy

Edwin Zong

Oasis Medical Group Inc., Bakersfield Ca USA

**Abstract** The electron ( $e^-$ ) and a positron ( $e^+$ ) are the decay products from neutron thru double beta decay. Cooking these two electrons of opposite charge/gender will break down to the gamma rays photons! The photon is generally accepted as electric charge neutral particle, so does the neutrino which happens to be the product from that neutron beta decay. The reverse of beta decay supports author's postulation which gamma rays are the nature of our big bang! Few will argue photons are electromagnetic/radiation power. However, many deny photon's mass status. In this paper, the author will assure you that photon is mass, which also happens to serve the foundation for all gravitational power/positional energy that exists today after a big bang. Furthermore, the author will also assure you that neutrino is the dark matter that floats in the space chilling with electrons ( $e^-$  and  $e^+$ ). Again, the author assures you that the famous gamma ray burst is just cosmic-sized of our well-studied experiment in our lab:  $e^- + e^+ \rightarrow \gamma + \gamma$ ! In the deep space, the reverse of beta decay happens immediately after a big bang! The  $\gamma$  ray photon forms electron and neutrino first. The neutrino is our evasive dark matter! The reverse of beta decay also supports the author's postulation that photons are mass as well! Our current universe's particles and forces (detectable or undetectable) are all derived from a big bang's photons. The primary objective of this study is to uncover the common origin for both mass and force in the universe along with their evolutionary path in the discipline of Newtonian physics.

**Keywords** Dark Matters, Neutrino, Gamma Ray, Photon, Big Bang

## 1. Introduction

In medicine, we often choose to use Positron emission tomography (PET) scan to detect "highly active" cancer cells. The highly active molecule chosen for PET tracer is fluoro-deoxy-glucose (FDG), an analogue of glucose. The high concentration of tracer/fluoro-deoxy-glucose indicates highly metabolic activity which corresponds to the highly regional glucose uptake-cancer cells. It is the standard of medical care for using this tracer to map the cancer metastasis. The PET scan detects pairs of gamma ray photons emitted indirectly by a positron-emitting radionuclide (tracer), which is introduced into the body such as FDG. [1] The current physics equation for the process is as follows:  $e^- + e^+ \rightarrow \gamma + \gamma$ . The electron ( $e^-$ ) and a positron ( $e^+$ ) are the decay products from neutron thru double beta decay.

It is so obvious that electrons are made from photons or  $\gamma$  photons! It is another piece of vital evidence supporting the author's deducing that our big bang is  $\gamma$  ray bust!

The  $\gamma$  ray photons are building blocks for everything existing in our universe!

Let's review some of the interesting nuclear decay here. An example of electron emission ( $\beta^-$  decay) is the decay of

carbon-14 into nitrogen-14:

$^{14}\text{C}_6 \rightarrow ^{14}\text{N}_7 + e^- + \nu\bar{}$ . From the equation, it shows that the daughter nucleus contains one proton more than the parent nucleus. Thus, this type of decay moves the parent atom to daughter atom who is next higher neighbor in the periodic table. Because the equation indicates that the daughter nucleus contains one proton more than the parent nucleus! Such birth panics many people who then, create anti-particle or antineutrino to "cure" the "non-sense". The anti-neutrino seems to be the foundation for the concept of anti-matter that dominant the pop culture thereafter.

An example of the beta plus decay ( $\beta^+$ ) is given by,  $^{23}\text{Mg}_{12} \rightarrow ^{23}\text{Na}_{11} + e^+ + \nu$

From the equation it is clear that the daughter nucleus has one proton less than the parent nucleus.

The neutrinos are similar to the electron, with one difference: neutrinos do not carry electric charge. There are 3 types of neutrinos: the "electron neutrino" which is associated with the electron and two other neutrinos are known as heavy electrons called the muon and the tau in current version of physics.

The only logical mechanism can be accepted here is that the neutrino is the intermediate particle between electron and photon! However, the author disagrees with the conception of anti-neutrino!

The interchange of proton and neutron will release electron and neutrino, which can be further broken down to  $\gamma$  ray photons. It is the reverse way of a big bang!

\* Corresponding author:

r4gomed@yahoo.com (Edwin Zong)

Published online at <http://journal.sapub.org/jnpp>

Copyright © 2015 Scientific & Academic Publishing. All Rights Reserved

The photon and neutrino carry no electric charge, but the electron carries positive or negative charge. The only mechanism that can be deduced is “polarization of photon bonding”. The neutrino is neutral or “even bonding” of photons. The positive or negative charged electron is polarized or “non-evenly bonding” of photons, which is heavier or massive on one end than the other end! We need to reject the idea of “anti-matter” or “anti-particle” which is the cause of fundamental confusion when we study the basic mechanism of particle and mass!

The photon bonding/coupling has recently been accomplished in a human lab-a 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. [2] According to the conservation law of mass, the mass of new “molecules” must come from somewhere rather than from nothing, therefore the photon has mass. The biological photosynthesis is another common natural phenomenon where photons are captured and incorporated in mass. [3]

At the beginning of a big bang or spontaneous combustion, the temperature and pressure are fiercely high; few would argue that any other form of mass has a chance to exist other than radiation itself which is a big bang’s photon! The author has subsequently linked gamma ray’s photons to a big bang. [4]

When a light photon is not paired, it possesses pure kinetic energy/radiation power with little gravitational effect (massless paradox), e.g. a cosmic ray! If it is paired e.g. photon bonding or photosynthesis, it possesses positional energy/gravitation (mass paradox for some people). [4] The usual term of gravity means earth’s gravity affects objects that are positioned on earth, but it really means that positioned objects are orbiting around earth simultaneously with or without physical contacts. Any objects may lose their gravity if they leave their orbital status, e.g. a free fall of raccoon. They will, however, regain their gravity when they resume their orbital status, e.g. a grounded raccoon. The single orbiting energy/power unifies our matter and particles, because particles possess orbital power/gravity as well when they are paired or orbiting each other. They will, however, lose their gravity power if they leave orbital status (divorce) and fly out.

The author, therefore, deduces that there are two forms of fundamental force/energy existing in our universe. 1. Gravitation. 2. Electromagnetic power.

Many people are overwhelmed by the standard mode of particles. Following the path of Einstein’s legend of “One” Equation theory ( $E=MC^2$ ) for all, the author postulates an incredible simple solution for a busy bee- “2” particle model theory, which are photon and Neutrino! Don’t trip, it is just like that!

In reality, the radiation and its bigger brothers/sisters e.g. electrons, neutrinos, protons, neutrons, and atoms are all we need to know in our reality of engineering for goods. Anything in between is just transient with few practical

application. The photon and neutrino, however, are uniquely important. The author has deduced that photons can be used in optical computing [4-6] and dark matter engineering along with medicine and defense operating systems. [4]

## 2. The Universe Inflation and Focal Collapse

There is more evidence in space supporting our big bang theory. It is a swirl-like/light polarization imprint on light less than one-trillionth of a second old from our big bang. [7] Such light polarization becomes possible when a big bang’s light encounters mass existing during a big bang. The big bang or spontaneous combustion lights encounter pre-existing mass which supports the author’s one universe, endless cycle theory. [8] If our space were a void, the light’s polarization simply will not happen. The author’s model of universe-“one universe endless cycles” is also supported by discovery of Methuselah star, HD 140283 which is “older” than our current universe. HD 140283 appeared to be 16 billion years old, more than two billion years older than the rest of the cosmos (measured to be  $13.78 \pm 0.037$  billion years old)! [9] It is simply not paradox; it is another evidence supporting the universe’s endless cycle in a realm of gravity and emulsion. [4]

The evolution of a big bang simply means that some of its greatest kinetic energy starts to be captured into its form of orbital energy/gravity during its cooling off stage, when galaxies start to be created. The destiny of a big bang is another big bang! The gravity along with power of emulsion (another form of gravitation) will eventually attract enough mass which will collapse into an ever increasingly big new pre-big bang dark matter!

The more mass is collected, the bigger a pre-big bang dark matter grows, which manifests stronger gravity-directly evidenced by our observation of the accelerated universe expanding! The accelerated speed is fueled by growing mass/increasing gravity power! Our observed universe has passed a new born stage of post big bang, passed a maturing stage of numerous galaxies forming. Our observed universe is entering a big bang or spontaneous combustion’s preparing stage. The accelerated expanding is a direct evidence of stronger gravity pull - larger and larger mass/dark matters are forming! For those who use accelerating universe as a reason doubting the big bang theory, the author can assure those doubters that the opposite is true!

Furthermore, our galaxies are inflating because of star’s photons. Without radiations from stars, our galaxies mass may collapse into dark matters which are indirectly supported by supernova effects. [10]

The initial universe’s inflation is powered by a big bang’s photons; the secondary inflation which occurs in galaxies is fueled by their star’s photons. The focal collapse is due to the fact that their stars run out of fuels, which subsequently age galaxies to their dwarf’s stage/senior galaxy citizen, which

are mostly made of dark matter along with fewer stars. It is evidenced by discovering dwarf galaxies in the current universe. [11]

Our universe is simply trillion and trillion light years big (infinite!), there are numerous focal collapses which are preparing for a next big bang. 14 billion light years is just a tiny drop of water in an infinitely gigantic size of our universe. Don't trip, it is just like that!

### 2.1. The Particle Evolution in the Universe

It has been estimated that dark matter may make up 84.5% of the total matter in the universe. [12] The big bang's radiation or high energy photons or gamma ray will penetrate any mass that exists during a big bang's explosion while some were polarized. For any gamma ray photons to be trapped or paired at any sub-nucleon level, those storming photons need to be "slowed down" first! Otherwise, the emulsion will not work with storming rays at the speed of light! The missing link is how lights can be slowed down; now the puzzle is finally solved! At a couple degrees above absolute temperature zero, the lights appear "slowed down" significantly where ubiquitous emulsion stands for a chance to work! [2] Our universe's background temperature is 2.7 Kelvin. The temperature may decrease even more when our region of universe is ripe for a next big bang; however, our background temperature will never reach absolute temperature zero. [4]

The **big bang Nucleosynthesis** starts with **merging/coupling of big bang's photons** in the soup of Cosmic Microwave photons (initial big bang's kinetic energy along with emulsion force) → **electron and neutrino** → **protons and neutrons/primordial nucleons formation** (some big bang's kinetic energy transfer to positional or orbital energy known as gravity) → the "initial" or unstable nucleus's decay/radioactive decay → dark matter/neutrino with gravity formation/ stabilization → β decay → electric activities/x-rays and λ ray bursts → mass gathering due to dark matter's gravity → visible galaxy formation.

The dark matter/neutrino (gravity types) may go thru "initial formation" first, then "stabilization" with radioactive decay: (Cowan-Reines neutrino experiment) beta negative decay reacted with protons to produce neutrons and positrons which quickly combine with electrons, releasing gamma rays. [13]

The significant part of mass after a big bang apparently are stuck in the most basic form of mass-dark matter/neutrino with gravity, the paired/bundled photons chilling with their mate-electrons. The halo of rich electric activities (e.g. x-ray), therefore, will be expected from any dark matter (gravity types) of substantial size! The author reasonably expects more activities to happen among electrons within or surround dark matters (gravity types), which may strike and trigger "dark matter (gravity types) signature" X ray. The author's view is supported by X-ray emission observed from the center of galaxies. [14]

The author believes the cosmic background wave and

space radiation make up the rest of "missing matters" since most scientists turn their eyes away from photons' mass status.

Without any fancy language, the path of a particle in the universe is fairly simple: radiation/photon → dark matter/neutrino → visible matter/inorganic matter → organic matter → you → collapse → pre big bang dark mass/neutrino → big bang → → you again! Don't trip, it is just like that!

### 2.2. The Energy Evolution in the Universe

The universe is a complete and enclosed system, because there is nothing existing outside our universe which may interfere with our universe's matter/energy. The conservation law of mass and energy perfectly applies the universe as a unit. We can safely say that the universe's 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. [4]

When a light/photon is not coupled, it possesses pure kinetic energy/radiation power with little gravitational effect. If it is coupled e.g. photon bonding or photosynthesis, it possesses positional energy/gravitation. [5] The destiny of a single photon/ray is to "marry" another photon/ray; the destiny of "married" photon/ray is to be separated from its partner. The endless cycle of "married" and "separation" of particles is closely mirroring the endless cycle of energy. The destiny of kinetic energy is to be transformed into positional energy; the destiny of positional energy is to be transformed into kinetic energy.

The conservation law of energy dictates that all nuclear power (strong or weak) existing after a big bang derives from electromagnetic power which is originated from a big bang's radiation-photons as well.

Instead of 4 basic forces, the author promotes 2 fundamental forces in the universe. 1. Gravitational/orbiting force. 2. Electromagnetic/radiation forces. Both are originated from "One" source-a photon! Don't trip, it is just like that!

### 2.3. The Role of Bonding in Physics and Spirit/Mind

The organic matters branch off from inorganic matters. The process requires light energy. The light energy could come from solar or earth itself. The most popular photosynthesis/photon bonding requires green chlorophyll pigments. In plants, these proteins are held inside organelles called chloroplasts, which are most abundant in leaf cells, while in bacteria they are embedded in the plasma membrane.

The first photosynthetic organisms probably evolved early in the evolutionary history of life and most likely used reducing agents such as hydrogen or hydrogen sulfide as sources of electrons, rather than water. [15] Cyanobacteria appeared later, and the excess oxygen they produced

contributed to the oxygen catastrophe, [16] which rendered the evolution of complex life possible.

The organic matters are the mass possessing both kinetic energy and positional energy. To become alive and grow, the living beings require additional matter that possesses almost pure forms of kinetic energy -light energy. However, nothing will stay alive without the bonding process.

The bonding process is the key for the matter's evolution. The bonding is therefore a key factor for human life. Other than physics, the human mind needs a bonding factor too. Such bonding factor is simply known as a focus factor in the human mind/spirit. Such focus factors can be real or phony. In our mind or spiritual life, both will do the trick to provide a healthy focus preventing our mind from scattering. As a matter of fact, our universe's progress (endless circles) is solely operated by the laws of physics; whatever we believe will not make any difference! Don't trip, it is just like that!

### 3. Results Analysis

At the beginning of a big bang, the temperature and pressure are fiercely high; few would argue that any other form of matter may stand a chance to exist other than radiation itself which is a photon. The author has subsequently linked gamma ray's photons to a big bang. [4] At a couple degrees above absolute temperature zero, the lights appear "slowed down" significantly where ubiquitous emulsion stands for a chance to work! [2] The most primitive mass/dark matter (gravity type) starts to form thru photon bonding. [3]

The photon is a force, but if it is coupled/structured or stationed (e.g. In an apple), it satisfies the definition for mass. In other words, the mass itself is a force as well. The photon is the perfect example of a "2 in 1" divine package. The photon is the force/son of the majesty; the photon is the carrier/majesty, the photon is the majesty. Does it sound familiar?

Without any fancy language, the path of particle universe is deduced as follows: radiation/photon → dark matter/neutrino → visible matter/inorganic matter → organic matter → you → collapse → pre big bang dark mass/neutrino → big bang → → → you again!

Following the path of Einstein's legend of "One" Equation for all, instead of the standard model of a particle; the author promotes "2" particle model which are photon and neutrino for practical application at the sub-electron and sub-nucleon level.

The universe is a complete and enclosed system, because there is nothing existing outside the universe which may interfere with the universe's matter/energy. The conservation law of mass and energy perfectly apply the universe as a unit. We can safely say that the universe's 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. [4]

The conservation law of energy dictates that all nuclear power (strong or weak) existing after a big bang derives from electromagnetic power which is originated from a big bang's radiation-photons.

Instead of 4 basic forces, the author simplifies it for 2 fundamental forces for practical application. 1. Gravitation/orbiting energy. 2. Electromagnetic/radiation forces. Both are originated from "one"-a photon!

### 4. Discussion

The basic physics has provided us with a remarkable understanding of the mechanics behind everything on earth. Our nature provides us many facts which help us uncover the mechanism with the help of logic based in the laws of basic physics. In this paper, the author tries to reason things based on nature's known fact rather than imaginary scenery, such as riding on a train at light speed while turning flash lights on. No one would stand a chance to flash his light if he were to be accelerated by the Large Hadron Collider (LHC) to a light of speed.

In this paper, the author tries to use plain language with common sense (no twisting adjective terminology) to uncover our universe's mechanism by mapping its mass and energy evolution. The conservation law of mass and energy perfectly applies our universe as a unit. Therefore, the author reasons: 1. The conservation law of mass dictates that a photon is the "single" unified origin for all mass. 2. The conservation law of energy dictates that photon energy/radiation is the "single" unified origin for all electromagnetic power along with nuclear forces as well as photon's mass which serves the "single" unified origin for all gravitational power that are exerted by our universe's mass (detectable or undetectable). The conservation law of mass and energy perfectly supports Einstein's "One" Equation for all, because our universe's story is all about changing in mass or energy, it is just like that- incredibly simple!

If we were to set aside our urge for sophistication and fantasy for a genie, following the path of Einstein's legend of "One" Equation theory ( $E=MC^2$ ), you will see that a photon is the "single" unified worship for all branches of science along with philosophy and religion. The universe is just another glorified "two in one package"-space (void) and photons. Time is a smart organizer invented by high level organic intelligence (not in a raccoon's universe). Our physical life is part of a photons' evolution while our spiritual mind is bouncing between reality and fairy tales.

The author promotes photon research for its practical application in future computer, medicine, and military along with the universe's mechanical study.

## REFERENCES

- [1] Weinstein EA; Ordonez AA; DeMarco VP; Murawski AM et al. (2014). "Imaging Enterobacteriaceae infection in vivo with  $^{18}\text{F}$ -fluorodeoxyisotopic positron emission tomography". *Science Translational Medicine* 6 (259). doi:10.1126/scitranslmed.3009815. PMID 25338757.
- [2] M. Lukin Harvard and V. Vuletic MIT Nature Sep 25, 2013.
- [3] Edwin Zong, The Origin of Particles, *Journal of Nuclear and Particle Physics*, Vol. 5 No. 3, 2015, pp. 45-51. doi: 10.5923/j.jnpp.20150503.01.
- [4] Edwin Zong, 2015 The Real Universe, *Journal of Nuclear and Particle Physics*, Vol. 5 No. 2, 2015, pp. 21-29. doi: 10.5923/j.jnpp.20150502.01.
- [5] McAulay, Alastair D. (1991). *Optical Computer Architectures: The Application of Optical Concepts to Next Generation Computers*. New York, NY: John Wiley & Sons. ISBN 0-471-63242-2.
- [6] Mortaza Noshad, Amin Abbasi, Reza Ranjbar, Reza Kheradmand. (2012) Novel All-Optical Logic Gates Based on Photonic Crystal Structure. *Journal of Physics: Conference Series* 350 (2012) 012007.
- [7] Gary Robbins 2014 Scientists see 'fingerprint' of Big Bang The San Diego Union-Tribune.
- [8] Edwin Zong. 2014 One Universe, Endless Cycles. *Science Research*. Vol. 2, No. 5, 2014, pp. 105-110. doi: 10.11648/j.sr.20140205.15.
- [9] A. J. Gallagher et al. (2010). "The barium isotopic mixture for the metal-poor subgiant star HD 140283". *Astronomy and Astrophysics* 523: A24. arXiv: 1008.3541. Bibcode: 2010A&A...523A...24G. doi:10.1051/0004-6361/201014970.
- [10] Ott, C. D. et al. (2012). "Core-Collapse Supernovae, Neutrinos, and Gravitational Waves". *Nuclear Physics B: Proceedings Supplement* 235: 381. arXiv: 1212.4250. Bibcode: 2013NuPhS.235..381O. doi:10.1016/j.nuclphysbps.2013.04.036.
- [11] Josh Simon (2005). "Dark Matter in Dwarf Galaxies: Observational Tests of the Cold Dark Matter Paradigm on Small Scales"
- [12] Sean Carroll, Ph.D., Cal Tech, 2007, The Teaching Company, *Dark Matter, Dark Energy: The Dark Side of the Universe*, Guidebook Part 2 page 46, Accessed Oct. 7, 2013.
- [13] C. L Cowan Jr., F. Reines, F. B. Harrison, H. W. Kruse, A. D McGuire (July 20, 1956). "Detection of the Free Neutrino: a Confirmation". *Science* 124 (3212): 103–4. Bibcode: 1956Sci...124..103C. doi:10.1126/science.124.3212.103. PMID 17796274.
- [14] Tauris & van den Heuvel (2006), "Formation and evolution of compact stellar X-ray sources", In: *Compact stellar X-ray sources*. Edited by Walter Lewin & Michiel van der Klis. Cambridge Astrophysics Series, p.623-665, DOI: 10.2277/0521826594.
- [15] Olson JM (May 2006). "Photosynthesis in the Archean era". *Photosyn. Res.* 88 (2): 109–17. doi:10.1007/s11120-006-9040-5. PMID 16453059
- [16] Buick R (August 2008). "When did oxygenic photosynthesis evolve?". *Philos. Trans. R. Soc. Lond., B, Biol. Sci.* 363 (1504): 2731–43. doi:10.1098/rstb.2008.0041. PMC 2606769. PMID 18468984.