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Article

Universe Mass Ratio Golden Rule of Dark Energy, Dark Matters, Leptons, Quarks, Neutrinos and Ordinary Matters

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Abstract: Our matter universe is made up of four components of dark energy (DE), dark matters (DMs), leptons and quarks which are created from the decay of the primary black hole through the inflation after big bang. In the three-dimensional quantized space model, the sum (DER) of the dark energy (DE) and radiations (R) is the flat photon space and there are 39 particles of 3 dark matters, 9 leptons and 27 quarks. Generally speaking, the mass ratio of the quarks with the 27 particles is smallest and the mass ratio of the DER photon space with the 1 massless photon is largest. Therefore, the mass ratios of DER, DMs, leptons and quarks are inversely proportional to the particle numbers of DER, DMs, leptons and quarks as the first assumption. This simple rule is called as the universe mass ratio golden rule in Figure 12. This simple rule is successfully applied to the observed mass ratios of the Planck and WMAP missions. The best particle number combination (1, 3, 9, 27) of the four components (DER, DMs, Leptons, Quarks) to explain the Planck 2018 and WMAP results is the same as the particle number combination (1, 3, 9, 27) of the 3-dimensional quantized space model. The calculated mass ratios of DER, DMs, leptons and quarks are 67.5 %, 22.5 %, 7.5 % and 2.5 %, respectively. And the calculated mass ratios of neutrinos and ordinary matters are 5.0 % and 5.0 %, respectively. The mass ratios of the dark energy (68.47(23) %) and matters (31.53(23) %) obtained from the Planck 2018 results are consistent with the calculated mass ratios of the DER (67.5 %) and matters (32.5 %). The mass ratio of the dark energy (72.1(15) %) obtained from the WMAP 9 year results is explained as the summed mass ratio (72.5 %) of DER (67.5 %) and neutrinos (5.0 %). The universe evolution including the super-massive black holes (SMBHs) is shown in Figure 4. The accelerated space expansion of our universe requires the addition of the new dark energy. If this new dark energy is added, the mass ratio of the dark energy is a little bit increased. The difference (0.97 %) between the observed value (68.47(23) %) and calculated value (67.5 %) is explained by adding the new dark energy in Figs. 2, 4, 7, 8, 9, 10 and 11. The corrected mass ratios of DER, DMs, leptons and quarks are 68.47 %, 21.8286 %, 7.2762 % and 2.4254 %, respectively. The corrected mass ratios of the neutrinos (called as cosmic background neutrinos) and ordinary matters (OMs) are 4.8508 % and 4.8508 %, respectively. These corrected mass ratios can explain the mass ratios obtained from the WMAP and Planck missions. In other words, the mass ratios calculated from the best particle number combination support the elementary particles, dark matters and dark energy (photon space) proposed by the three-dimensional quantized space model based on the 10-D Euclidean space.

Keywords: universe mass ratio golden rule; dark energy; dark matters; Planck mission; WMAP missions; black holes; cosmic background neutrinos; universe evolution; flat photon space

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1. Introduction

The universe starts from the big bang in terms of the standard model of the cosmology. Then the singularity black hole after the big bang has been evolving through the inflation to the present flat universe. Through the inflation period, the matters and anti-matters were created from the pair production of the radiations. Then only the matters have survived until the present time [1]. The standard model of the cosmology and particles cannot explain several questions such as the CP problem, dark energy (DE) and dark matters (DMs) etc. In other words, the CP problem about how the anti-matters disappeared needs to be solved. Also, the standard model of the particles has to be extended to include the dark matters. And, the properties of the dark energy are uncertain at this moment. In the universe evolution of the standard model, after the big bang, the radiations (photons) were dominating and then the dark matters (DMs) and ordinary matters (OMs) were dominating. At the present time, the dark energy to cause the accelerated space expansion of the universe is dominating. The physical properties of the dark energy and dark matters are unknown and only the normal matters and radiations are presently known in the standard model (SM). The radical ideas could be required to solve the unsolved questions of the universe such as the dark energy and dark matters. Therefore, the three-dimensional quantized space model (TQSM) based on the 10-D Euclidean space [2] is introduced as the extension of the standard model (SM) in the present work.

Experimentally, the present mass ratios of the universe components which are the ordinary matters, dark matters and dark energy have been determined by the COBE [3], WMAP [4–6] and Planck [7] missions observing the temperature fluctuations of the cosmic microwave background radiations (CMB or CMBR). The CMB resolutions of the WMAP [4–6] and Planck [7] missions were improved to decide the mass ratios of the dark energy (DE) and matters (dark matters (DMs) + ordinary matters (OMs)) at the present time. These missions show that the present universe is flat [8]. The mass ratios are presented by the density ratios relative to the critical density. Therefore, the total mass density ratio of the flat universe is 1 relative to the critical mass density. And the DE density (Ω_Λ) and the matter density (Ω_m) are 0.685 and 0.315, respectively, based on the temperature fluctuations of the CMB radiations according to the Planck mission [7]. The DE density and matter density are in the same order at the present time. Why these two densities are so close is not physically understood. This is called as the cosmic coincidence problem [9]. The present mass ratios of the universe components cannot be determined without the CMB radiation data in terms of the standard model of the universe [10–13].

Now, in the present work, the three-dimensional quantized space model (TQSM) is applied to the unsolved questions of the universe. The singularity black hole (primary black hole (PBH)) of our matter universe is assumed to decay to the elementary particles (matters) and dark energy (DE) in Figure 1. The matters are separated into the dark matters, leptons and quarks. In the standard model, the dark matters and dark energy are not known. The total DM mass is much larger than the total lepton mass. The dark energy is much larger than the matter mass according to the Planck [7] and WMAP [4–6] missions observing the CMB radiations. It is thought that the total quark mass is smaller than the total lepton mass. In Figure 1, the produced mass ratios of the dark energy and matters are inversely proportional to the particle numbers of the dark energy and dark matters as the first assumption when the particles are produced from the decay of the primary black hole (PBH) of our matter universe. As seen in Figure 1, the particle numbers of the DE (DER in the present work), DMs, leptons and quarks are 1, 3, 9 and 27, respectively, as the best fitting to the Planck 2018 results in which the dark energy and matters show the mass ratios of 68.47 (73) % and 31.53 (73) %, respectively. The best particle number combination (1, 3, 9, 27) of the four components (DER, DMs, Leptons, Quarks) to explain the Planck 2018 and WMAP results is the same as the particle number combination (1, 3, 9, 27) of the 3-dimensional quantized space model. In Figure 1, the particle numbers of the DE (DER in the present work), DMs, leptons and quarks with 1, 3, 9 and 27, respectively, have the mass ratios of 67.5 % for the dark energy (DER) and 32.5 % for the matters. According to the results of Figure 1, the dark energy has the 1 massless particle corresponding to the photon. Therefore, the dark energy is considered as the photon space in Figure 2. Because the radiations are also the photons, the dark energy (DE) and radiations (R) are observed together as the DER photons. The Dark energy is the photon space covering the whole space of our matter universe and has the constant mass density. But the radiations are defined as the local photons (local photon spaces) covering the local space of our matter universe in Figure 2. The radiations have the variable mass densities at the different space locations. The radiations produced from the primary black hole are observed as the cosmic microwave background radiations (CMB or CMBR) by the Planck [7] and WMAP missions [4–6] at the present time. The particle numbers of 1, 3, 9 and 27 in Figure 1 corresponds to the photon (dark energy + radiations, DER), 3 dark matters (bastons), 9 leptons and 27 quarks, respectively, in the TQSM model in Figure 3. The standard model with only the 6 leptons and 18 quarks cannot reproduce the observed mass ratios of the dark energy and matters even though the dark energy and dark matters are assumed for comparison in Figure 1 of the present work. In the section 2, the detailed

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explanation for the cases without adding the new dark energy shown in Fig.2 is made. And in the section 3, the cases including the new dark energy causing the accelerated space expansion in Figure 2 are explained.

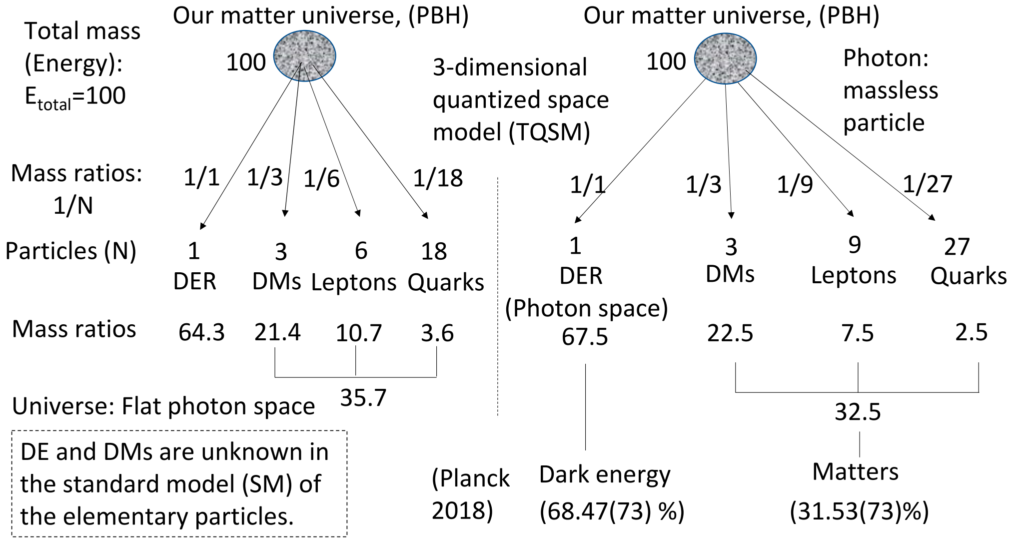
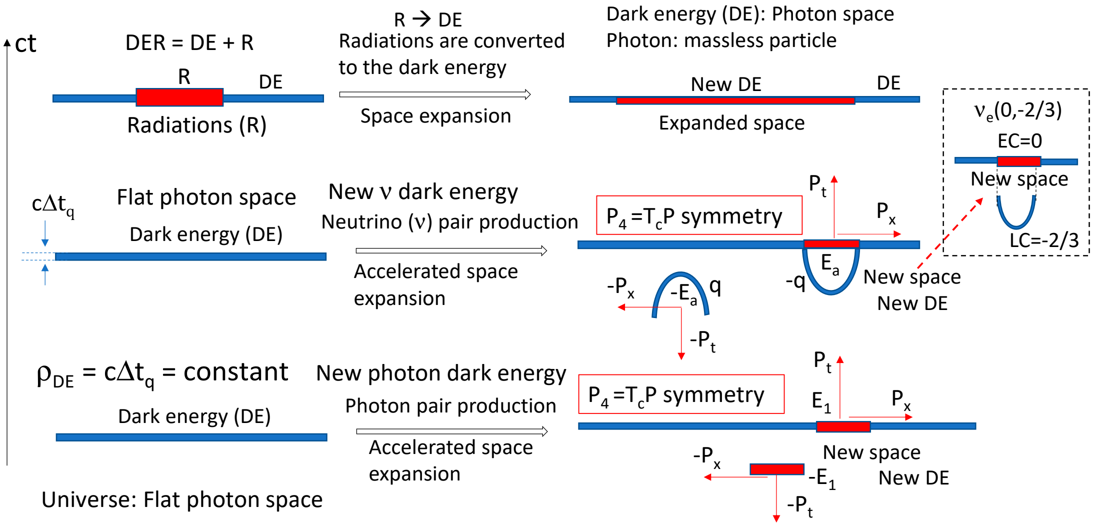


Figure 1. Mass ratios of dark energy (DER), 3 dark matters (DMs), 9 leptons and 27 quarks in terms of the 3-dimensional quantized space model (TQSM) [2,7].



Three types of the radiations (R) (γ(0), γ(0,0) and γ(0,0,0)) have the same space distribution patterns on the photon space (dark energy (DE)) through the inflation of the universe. The WMAP and Planck missions observe the γ(0,0) CMB radiations which show the ratios of matters and DER.

Figure 2. Radiations, new neutrino dark energy and new photon dark energy.

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	Bastons (EC), γ(0)				Leptons(EC,LC), γ(0,0)				Quarks(EC,LC,CC), γ(0,0,0)			
	EC				EC				EC			
X1	-2/3	B1			0	ν_e	ν_μ	ν_τ	2/3	u	c	t
X2	-5/3	B2			-1	e	μ	τ	-1/3	d	s	b
X3	-8/3	B3			-2	Le	Lμ	Lτ	-4/3	Q1	Q2	Q3
Total	-5				-3				-1			
	Dark matters				LC				LC			
X4	3 DMs				-2/3	ν_e	e	Le	0	u	d	Q1
X5	-1 = 2/3 -1/3 -4/3				-5/3	ν_μ	μ	Lμ	-1	c	s	Q2
X6	-3 = 0 -1 -2				-8/3	ν_τ	τ	Lτ	-2	t	b	Q3
Total	-5 = -2/3 -5/3 -8/3				-5				-3			
	1-D fermions (s=1/2)				9 Leptons				CC			
X7									-2/3(r)			
X8	Each flavor (charge)								-5/3(g)			
X9	corresponds to each								-8/3(b)			
Total	dimensional axis.						27 Quarks		-5			
	J(-5)$_3$				P(-3,-5)$_3$				B(-1,-3,-5)$_3$			

$F_g = F_g(m) = G_N \frac{m_1 m_2}{r^2}$

$F_B = F_B(m) = G_{NB} \frac{m_1 m_2}{r^2}$

$F_c = F_c(EC)+F_c(LC)+F_c(CC)$

$F_c(q) = k(q)\frac{q_1 q_2}{r^2}$

$F = F_g + F_B + F_c$

Coulomb force only between same photons.

γ(0) ⇸ γ(0,0) ⇸ γ(0,0,0)

Gravitational force between all particles.

g(0) ⇄ g(0,0) ⇄ g(0,0,0)

$G_{NB} = \frac{m_B}{m_g} G_N$

: 3-D fermions (s = 3/2)

Figure 3. Elementary particle table of the 3-dimensional quantized space model based on the 10-D Euclidean space [2].

2. Mass ratios of the dark energy and matters without the new dark energy added

The particle table of the elementary fermions including the three dark matters (bastons) is shown in Figure 3. There are three dark matters, nine leptons and 27 quarks. Also, the dark energy (DE) is the flat photon space covering the whole space and the radiations (R) are the flat photon space covering the local space in Figure 2. The massive particles are defined as the warped photon space defined in the local space. The elementary fermion particles are the basic warped photon spaces with the specified charges. After the big bang, the matter primary black hole (PBH) is created and decays to the primary DM black holes, primary lepton black holes and primary quark black holes along with the dark energy (DER) in Figure 4. The 3-D PBHs are the collectively merged states made up of many particles within the very small spaces. In other words, the produced particles of DMs, leptons and quarks become the black holes like the 3-D PBHs because of the very small space sizes near the inflation period in Figure 4. The DM PBH, lepton PBH and quark PBH correspond to the 3 dark matters, 9 leptons and 27 quarks, respectively. Therefore, the mass ratios of the DM PBH, lepton PBH and quark PBH are 1/1, 1/3, 1/9 and 1/27, respectively in Figures 1, 4 and 5.

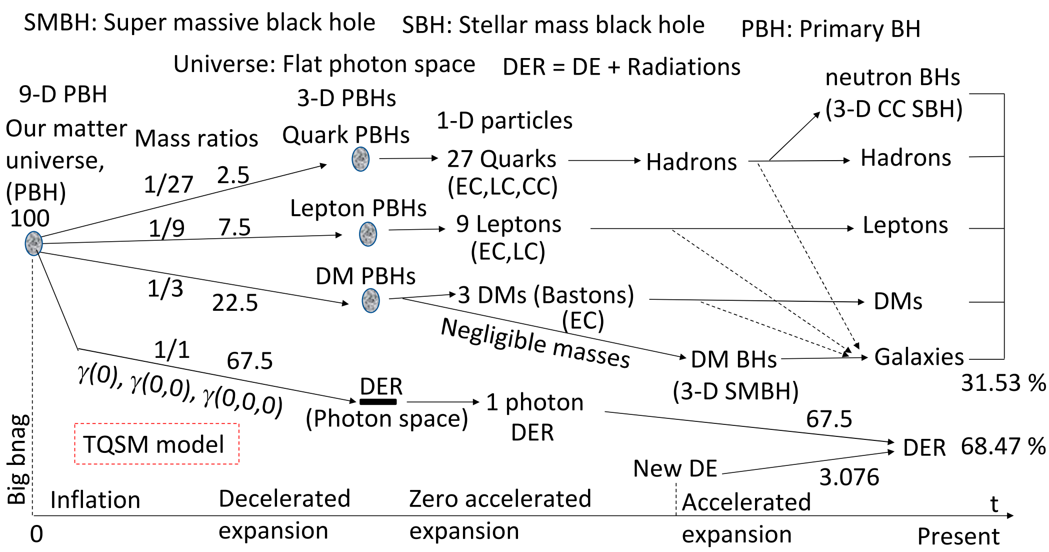

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Figure 4. Universe evolution and mass ratios. The 3-D PBHs are the collectively merged states made up of many particles within the very small spaces. The 3-D lepton PBHs are the collectively merged states made up of many leptons within the very small spaces. The total masses of the neutron (stellar mass) black holes (SBHs) and super-massive black holes (SMBHs) are relatively negligible [12,14–18].

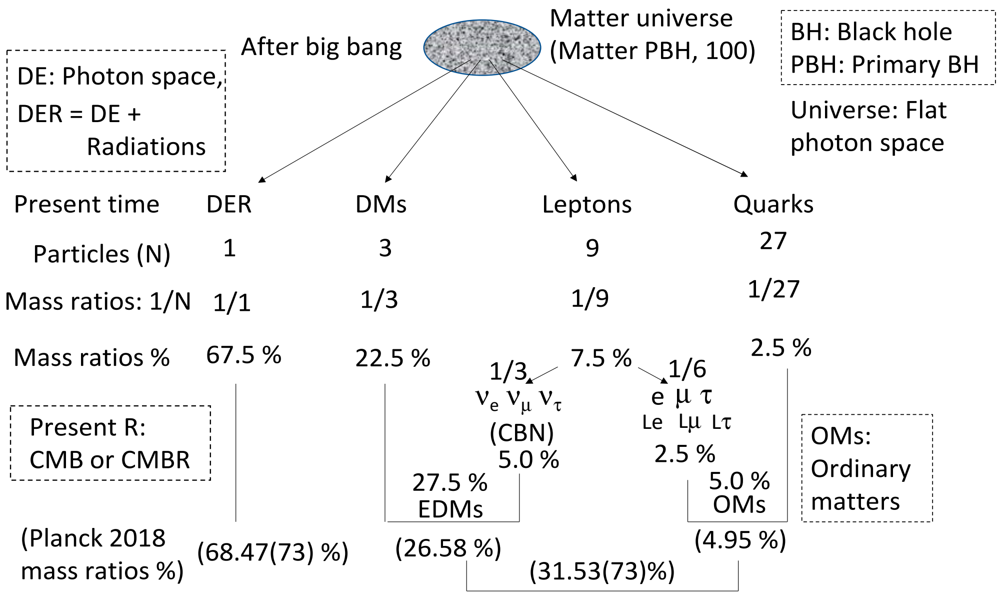

Figure 5. Calculated mass ratios are compared with Planck 2018 mass ratios [7].

These primary black holes decays to the matters (m) including the dark matters (DM), leptons and quarks. And the photon space (DER) of the radiations (R) and dark energy (DE) is shown in Figure 2. The whole primary black hole is converted to the matters (m) and photon space (DER) in Figures 1, 4 and 5. It is assumed that the converting mass ratios are inversely proportional to the number (N) of particles. The photon is the massless particle. The mass ratios of the DER, DMs, leptons and quarks in Figures 1, 4, 5 and 6 are 1/1, 1/3, 1/9, and 1/27, respectively. The total mass of the universe is normalized as 100 in the percentile unit. Then the mass ratios of the DER, DMs, leptons and quarks are 67.5, 22.5, 7.5, and 2.5, respectively in Figures 1, 4, 5 and 6. And the radiations (R) are the cosmic microwave background radiations (CMB) at the present time. The observed dark energy ratio in the Planck mission is the DER ratio in the present time. The DER density (0.685) and the matter density (0.315) based on the temperature fluctuations of the CMB radiations according to the Planck mission [7] are consistent with the DER density (0.675) and the matter density (0.325), respectively, predicted from the present work in terms of the TQSM model in Figures 1, 4, 5 and 6. This result supports the dark energy, 3 dark matters (bastons), 9 leptons and 27 quarks proposed by the three-dimensional quantized space model (TQSM) in Figure 3.

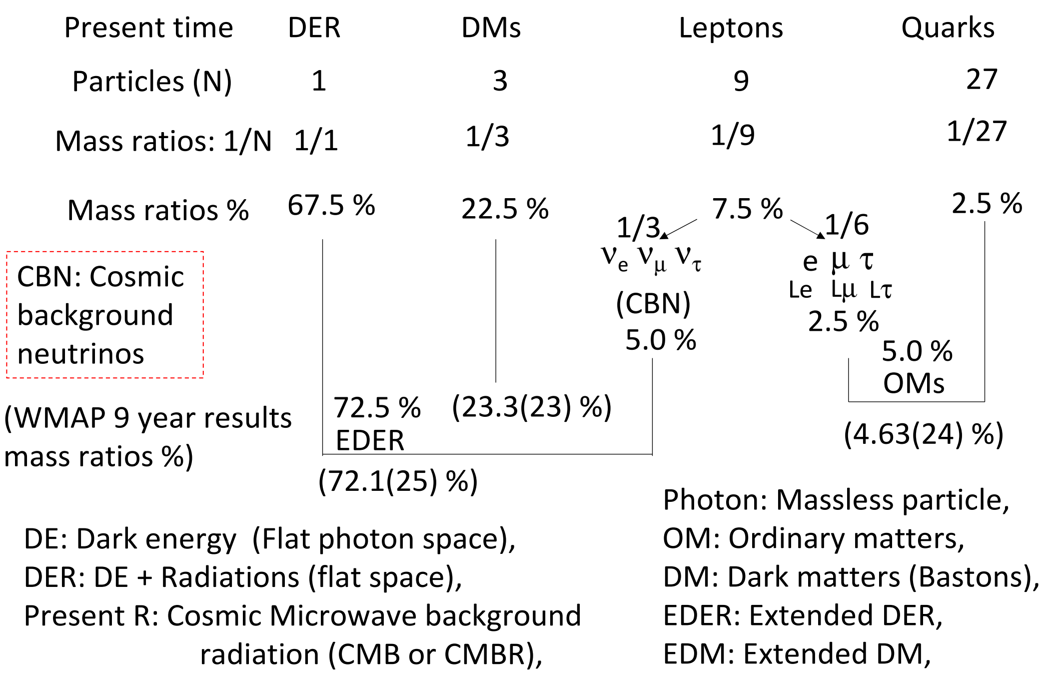

Figure 6. Calculated mass ratios are compared with the WMAP 9 year mass ratios [4].

First, the universe evolution will be explained as shown in Figure 4. The matter universe primary black hole (PBH) is created from the big bang. This matter universe PBH has the 9 space dimensions with the positive energy of the positive time momentum along the absolute time axis. In other words, $p_t = E/c > 0$. For simplicity, the explanation of the space momenta is excluded in the present work. Through the inflation, the matter universe black hole decays to three PBHs of the DM PBH, lepton PBH and quark PBH, and the photon space (DER) of the dark energy and radiations. At the P point in Figures 7 and 8, the whole matter PBH is consumed and the DER mass (energy) ratio reaches the maximum ratio of 67.5 %. Here, the dark energy (DE) is defined as the photon space covering the whole universe flat space. And the radiations are defined as the localized photon spaces covering the local universe flat space in Figure 2. The three PBHs of the DM PBH, lepton PBH and quark PBH decay to the lighter PBHs of the smaller DM PBHs, smaller lepton PBHs and smaller quark PBHs, respectively following the creation of the 3 DMs and 9 leptons and 27 quarks. The lepton PBHs and quark PBHs decay in the very short time to the 9 leptons and 27 quarks, respectively. The DM PBHs decay in the relatively longer time to the 3 DMs (bastons) and super-massive black holes (SMBH). These DM SMBHs make the galaxies as shown in Figure 4. The total mass ratio of the DM SMBHs is negligible when compared with the total mass ratios of the ordinary matters and DMs [12,14–18]. During the Z period in Figure 7, the DER mass (energy) ratio remains constant at the mass ratio of 67.5 %.

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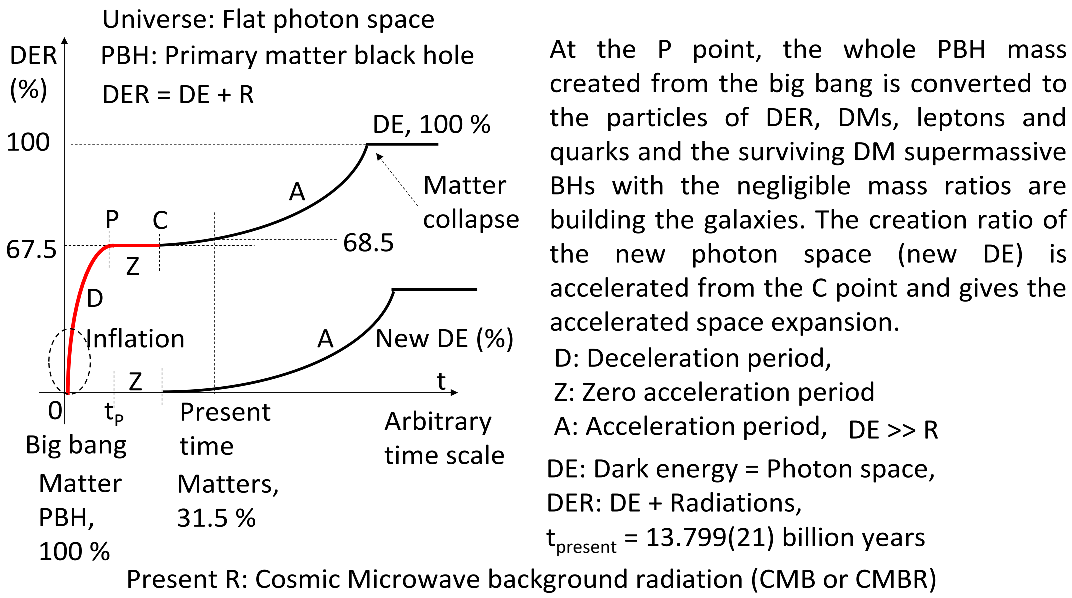

Figure 7. Changing patterns of the percentile mass ratio of the dark energy.

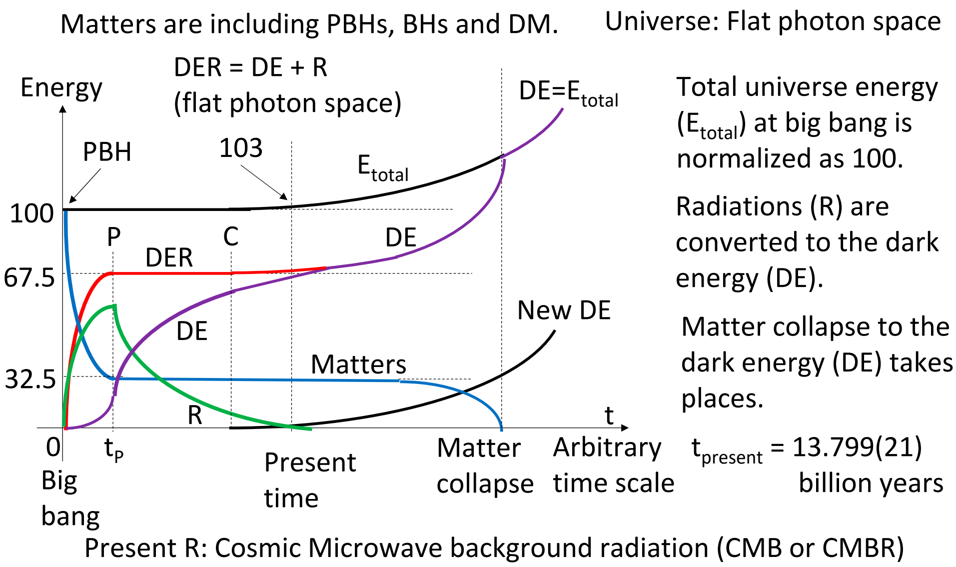

Figure 8. Changing patterns of the mass ratios.

The universe PBH decays to the elementary fermions and photons (photon space, DER) in Figures 1, 4, 5, 6, 7 and 8. The mass of the universe PBH is distributed to the 4 masses of the DER (1 photon), 3 DMs, 9 leptons and 27 quarks. The distributed mass ratios are assumed to be inversely proportional to the elementary particle numbers as the first approximation. The relative mass ratios are 1/1 for the dark energy + radiations, 1/3 for the dark matters, 1/9 for the leptons and 1/27 for the quarks. The percentile ratios are 67.5 % for the dark energy + radiations, 22.5 % for the dark matters, 7.5 % for the leptons and 2.5 for the quarks. The calculated mass ratios of the dark energy + radiations and matters in terms of the TQMS model are 67.5 % and 32.5 %, respectively. The mass ratios of the dark energy (DER in TQSM) and matters have been observed from the temperature fluctuations of the cosmic microwave background radiations (CMB) by the Planck and WMAP missions. Planck mission has the better CMB resolution than the WMAP missions. The DE ratio (72.8(15) %) by the WMAP 9 year mission [4] could have the contamination from the leptons as shown in Figure 6 because of the not-enough data resolution. The DE ratio (72.8(15) %) by the WMAP 9 year mission [4] is consistent with the summed mass ratios (EDER) (72.5 %) of the DER and neutrinos calculated in the present work. Also, the mass ratio (23.3(23) %) of dark matters by the WMAP 9 year results [4] is consistent with the mass ratio (22.5 %) of the dark matters (DMs) calculated in the present work. But the DE ratio (68.47(73) %) by the Planck 2018 results [7] could show the relatively negligible contamination from the leptons because of the much-improved data resolution in Figures 1 and 5. The mass ratio (68.47(73) %) of the dark energy by the Planck 2018 mission is consistent with the calculated mass ratio (67.5 %) of the dark energy in the TQMS model in Figures 1 and 5. Also, the mass ratio (26.58 %) of dark matters by the Planck 2018 results is consistent with the summed mass ratio (EDMs) (27.5 %) of the dark matters (DMs) and neutrinos calculated in the present work. This means that the neutrinos are included in the DMs in the Planck 2018 mission but the same neutrinos are observed as the part of the dark energy in the WMAP 9 year mission. The ordinary matters (OMs) consist of the charged leptons and quarks. All quarks are converted to the hadrons as shown in Figure 4. The mass ratio (5.0 %) of the ordinary matters in the present TQSM model is consistent with the mass ratio (4.95 %) of the ordinary matters for the Planck 2018 results and the mass ratio (4.63(24) %) of the ordinary matters for the WMAP 9 year results. It is surprised that the mass ratios of the dark energy, dark matters, leptons and quarks obtained by the simple calculation in the present TQSM model reproduce the mass ratios of the dark energy, dark matters and ordinary matters by the Planck 2018 and WMAP missions, well as shown in Figures 1, 4, 5 and 6.

3. Mass ratios of the dark energy and matters with the new dark energy added

In the section 2, the mass ratios of the dark energy and matters are reproduced without the new dark energy added. The accelerated space expansion is caused by the addition of the new photon space (DE). The accelerated space expansion has been observed. In order to explain the accelerated space expansion, the new dark energy needs to be added in Figures 2, 7 and 8. In the present TQSM model, the new dark energy can be added by the neutrino pair production and photon pair production shown in Figure 2. In Figure 2, two $P_4 = T_cP$ symmetry processes of the neutrino pair production and photon pair production are considered to make the new dark energy or new photon space.

If the new dark energy (new photon space) is added in Figure 9, the mass ratio of the dark energy should be increased. The mass ratio (68.47(73) %) of the dark energy by the Planck mission is bigger than the calculated mass ratio (67.5 %) of the dark energy in the TQMS model in Figures 1, 4, 5, 7 and 9. This mass ratio increase of the present dark energy can be successfully explained by the addition of the new dark energy which has been causing the accelerated space expansion of the universe in Figures 4, 5, 7, 8 and 9. In Figure 9, if we add the new dark energy with the mass ratio of 2.98 %, the Planck 2018 results [7] can be reproduced perfectly. Therefore, the mass ratios of DER, DMs, leptons and quarks are assigned as 68.47 %, 21.8286 %, 7.2762 % and 2.4254 %, respectively in Figure 9. These mass ratios are compared with the WMAP 9 year results [4] in Figure 10. The WMAP 9 year results [4] are well explained by the assigned mass ratios of DER, DMs, leptons and quarks in Figure 10. The mass ratio (72.1 (25) %) of the dark energy observed by the WMAP 9 year results [4] includes some contributions from the mass ratio (4.7694 %) of the neutrinos from the not-enough resolutions of the CMB radiations. Also, it is thought that the mass ratio (23.3 (23) %) of the dark matters observed by the WMAP 9 year results [4] includes some contributions from the mass ratio (4.7694 %) of the neutrinos. These neutrinos are called as the cosmic background neutrinos (CBNs). The possible contributions from the cosmic background neutrinos (CBNs) to the observed results of the dark energy and dark matters are plotted in Figure 11.

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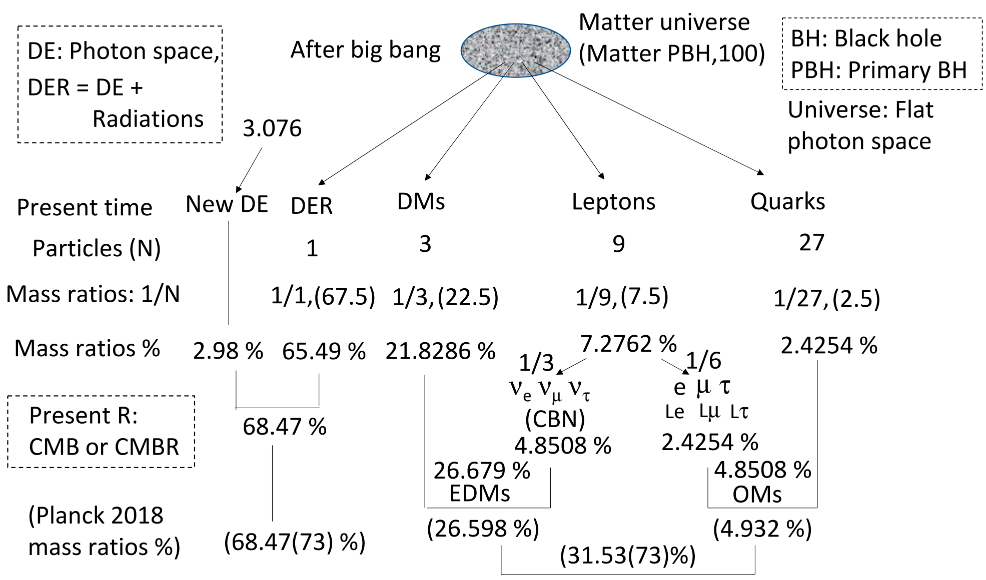
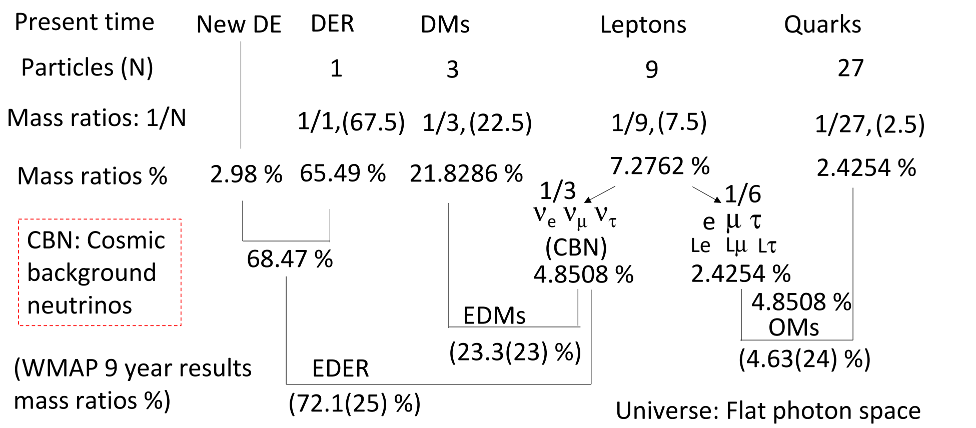


Figure 9. Mass ratios with the new dark energy added are compared [7].



The CMB spectrum with the good resolution excluding the cosmic background neutrinos (CBN) shows the dark energy mass ratio of 68.47% with the new dark energy effect of 2.98 %. On the CMB spectrum, if the CBN mass ratio of 3.63 % is added from the poor resolution, the extended dark energy of EDER has the mass ratio of 68.47+3.63=72.1 %. Note that WMAP results have the large errors.

Figure 10. Mass ratios with the new dark energy added are compared [4].

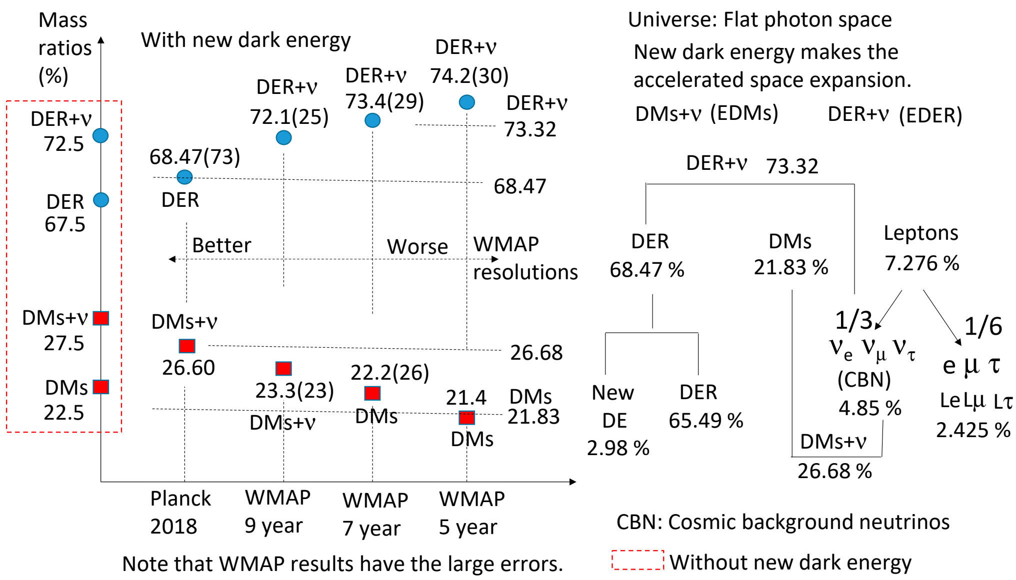


Figure 11. Mass ratios of Planck 2018 results [7] and WMAP results [4–6] are compared.

The dark energy of the photon space is originated from the sum of the γ(0) DE, γ(0,0) DE and γ(0,0,0) DE. The CMB radiations are originated from the sum of the γ(0) CMB radiations, γ(0,0) CMB radiations and γ(0,0,0) CMB radiations. The ordinary matters have the electromagnetic interactions from the γ(0,0) CMB radiations. The Planck and WMAP missions observe the spectra of the γ(0,0) CMB radiations. All three CMB radiations have the same spectrum pattern of the CMB radiations through the inflation. Therefore, the mass ratios of the dark energy and matters in our matter universe can be obtained from the temperature fluctuations of the γ(0,0) CMB radiations.

4. Summary

In the standard model (SM) the 24 elementary particles (fermions) of the 6 leptons and 18 quarks are known. The dark matters (DMs) and dark energy (DE) are not known in the SM model. Therefore, the standard model needs to be extended to include the dark matters and dark energy. As the extension of the standard model, the three-dimensional quantized standard model (TQSM) has been proposed. In terms of the TQSM model, the 39 elementary particles (fermions) of the 3 dark matters (bastons), 9 leptons and 27 quarks are proposed in Figure 3. And the dark energy (DE) is defined as the flat photon space which has the one elementary particle (massless boson) without the rest mass. In the TQSM model, because the radiations (R) are the localized photon space, the whole photon space is described as DER including the dark energy (DE) and radiations (R). Here the dark energy is the flat photon space covering the whole universe with the constant density. In the present TQSM work, the matter universe consists of DER, DMs, leptons and quarks. These four components of our matter universe are produced from the matter universe primary black hole through the inflation after the big bang. The 3-D PBHs are the collectively merged states made up of many particles within the very small spaces. In other words, the produced particles of DMs, leptons and quarks become the black holes like the 3-D PBHs because of the very small space sizes near the inflation period in Figure 4. As the universe space expands to the larger space size, the 3-D PBHs decay to the particles of the DMs, leptons and quarks. And the surviving DM super-massive black holes (SMBH) make the galaxies as shown in Figure 4. The total mass ratio of the DM SMBHs is negligible when compared with the total mass ratios of the ordinary matters and DMs [12,14–18]. The universe evolution is shown in Figure 4.

Generally speaking, the mass ratio of the quarks with the particle number of 27 is smallest and the mass ratio of the DER photon space with the 1 massless photon with the 1 particle number is largest. Therefore, the mass ratios of DER, DMs, leptons and quarks are inversely proportional to the particle numbers of DER, DMs, leptons and quarks as the first assumption. This rule is called as the universe mass ratio golden rule in Figure 12. This simple rule is successfully applied to the observed mass ratios of the Planck and WMAP missions in Figures 1, 4, 5 and 6. The mass ratios of the dark energy (68.47(23) %) and matters (31.53(23) %) obtained from the Planck 2018 results are consistent with the calculated mass ratios of the DER (67.5 %) and matters (32.5 %) in Figures 1 and 5. The mass ratio of the dark energy (72.1(15) %) obtained from the WMAP 9 year results is explained as the summed mass ratio (72.5 %) of the DER (67.5 %) and neutrinos (5.0 %) in Figure 6.

Universe mass ratio golden rule

Matter universe primary black hole (N = 1, 100%)

Particle numbers (N): (DER, DMs, Leptons, Quarks): (1, 3, 9, 27)

Mass ratios (1/N): (DER, DMs, Leptons, Quarks):
(1/1, 1/3, 1/9, 1/27) =
(67.5%, 22.5 %, 7.5 %, 2.5 %)

Universe: Flat photon space

Leptons (N = 9, 7.5 %)

Particle numbers (N): (Neutrinos, Charged leptons): (3, 6)

Mass ratios (1/N): (Neutrinos (CBN), Charged leptons):
(1/3, 1/6) = (5.0 %, 2.5 %)

Figure 12. Universe mass ratio golden rule used in the present work is shown without adding the new dark energy (DE). CBN means the cosmic background neutrinos.

The accelerated space expansion of our universe requires the addition of the new dark energy. If this new dark energy is added, the mass ratio of the dark energy is increased. The difference (0.97 %) between the observed value (68.47(23) %) and calculated value (67.5 %) is explained by adding the new dark energy. The corrected mass ratios of DER, DMs, leptons and quarks are 68.47 %, 21.8286 %, 7.2762 % and 2.4254 %, respectively in Figure 9. The corrected mass ratios of the neutrinos (called as cosmic background neutrinos) and ordinary matters are 4.8508 % and 4.8508 %, respectively in Figure 9. These corrected mass ratios can explain the mass ratios obtained from the WMAP results in Figures 10 and 11.

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