

DOI: <https://doi.org/10.24297/jap.v20i.9246>**Unity of the Universe: New and Global Theory Correlating the Ratio of Hydrogen - Helium to Dark Energy – Matter: Sayed's Golden Formula (SGF)**

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**Abstract.**

Singularity and unity is the glorified **Creator** of the universe. This article went deeply through hydrogen and helium percentages in the universe to explain and correlate their existence with dark energy and matter. Our finding indicates that the hydrogen to helium (H/He) ratio in the universe should be and equal to  $\pi$ . Our previous work predicted that the dark energy to dark matter (DE/DM) ratio is also equal  $\pi$ . It was deduced that the ratio of hydrogen and helium to dark energy and matter  $\{(H/He)/(DE/DM)\}$  is correlated. This ratio, which is called **S-ratio**, was simply estimated and found to be **unity**. It was also observed that the iron of mass number 56 is also in correlation with hydrogen and helium content; the ratio is specifically equal  $\sqrt{\pi}$ . This work is uniquely correlated the estimated  $\{(H/He)/(DE/DM)\}$  ratio with the Golden ratio to produce a new global law to be expressed as Sayed Golden formula (**SGF**). The value of SGF is 1.71347. The results of H/He were also compared with many of the other published works.

**Keyword:** Hydrogen-helium to dark energy and matter ratio, S-ratio,  $\pi$ , Sayed's Golden formula (SGF)

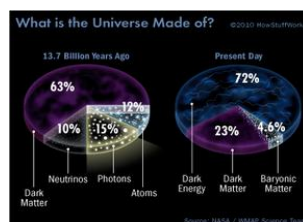
**I. Introduction**

As a matter of fact, the universe is controlled and obeys specific laws and correlations. The scientists and talent researchers are asked to think, discover, predict and explain the puzzling topics and mysteries in the universe. I personally tried to elucidate and explain some of these mysteries (1-7). After the Big Bang, the universe was like a hot soup of particles (i.e. protons, neutrons, and electrons). When the universe started cooling, the protons and neutrons began combining into ionized atoms of hydrogen (and eventually some helium). These ionized atoms of hydrogen and helium attracted electrons, turning them into neutral atoms - which allowed light to travel freely for the first time, since this light was no longer scattering off free electrons (8). This work is mainly looking forward to find the correlation between hydrogen and helium content and the dark energy and matter in the universe. It should be mentioned that the basic idea of this research was spirited from the **holy Quran - Prophet Mohamed**.

**II. Hydrogen and helium content in the universe**

Literature revision of hydrogen and helium composition in the universe and life at the beginning and now are given in the following summarized points.

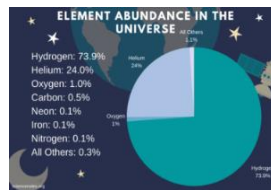
- The composition of the universe (Baryonic matter, dark matter and dark energy) at its beginning and at the present day as given in one of publications is shown in the following figure 1 (9).



**Figure 1:** The stuff of the universe then and now

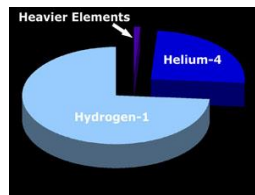
- Our recent published work found and predicted that the dark energy and dark matter are 71.314, 22.7 (the ratio=  $\pi$ ) respectively and the baryonic is 3.538 /2.448 (**1**).
- The mass percentage of the hydrogen (H) and helium(He) in the universe are in the ranges 75-76 % and 24-25% respectively (about 92% hydrogen atoms and 8% helium atoms ) as given by (10)

- Hydrogen and helium are estimated to make up roughly 74% and 24% of all baryonic matter in the universe respectively. Despite comprising only a very small fraction of the universe, the remaining "heavy elements" can greatly influence astronomical phenomena (11).
- Approximately 73% of the mass of the visible universe is in the form of hydrogen. Helium makes up about 25% of the mass, and everything else represents only 2% (12)
- The birth of the universe article gives 74% and 25% for Hydrogen and Helium respectively (13).
- Other values were given as 73 and 25 for H and He in the Sun respectively (14)
- Hydrogen and helium are a big-bang nucleosynthesis elements of 73 and 25% in the universe (15). With expansion of the universe (1,2), this ratio was given to be 74 and 26 (15)
- The Sun, like others stars, is a ball of gas. In terms of the number of atoms, it is made of 91.0% hydrogen and 8.9% helium. By mass, the Sun is about 70.6% hydrogen and 27.4% helium (16).
- Here is the estimated abundance of elements in the Milky Way galaxy (73.9 and 24 for H and He respectively), which you can take as representative of the composition of the universe (17).



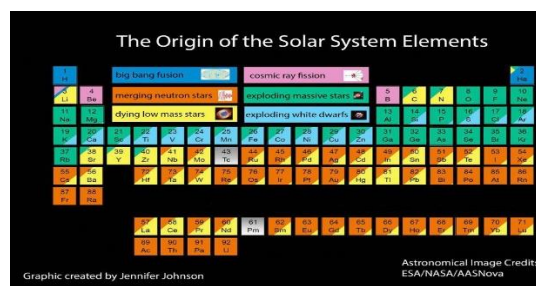
**Fig.3:** Percentage of the hydrogen and Helium in the universe

- The value 75% and 25% was given for hydrogen and helium in the universe respectively (18).
- The levels of H , He and heavy elements in the Sun are 74 , 25 and less than 1% respectively (19)



**Fig.4 :** Composition of hydrogen helium and heavier elements in the Sun

- The origin, the way of syntheses and presence of the elements in the solar system can be summarized and given in the following periodic table (17)



**Fig.5 :** The origin of the solar system elements

- The hydrogen and helium ratio in the stars (e.g. the Sun) is given as 74.9% and 23.8% (in the photosphere) respectively (20).

### III. Prediction of the Hydrogen/helium Ratio and Sayed`s Golden Formula (SGF):

The predicted ratio of hydrogen to helium in the universe can be expressed as in the following equation:

$$(H / He) = \pi \tag{1}$$

Where, H and He are the predicted hydrogen helium percentage respectively. As gravity pulled the hydrogen and helium together the earliest stars formed. Fusion inside stars would convert hydrogen (H) to more helium (He), then to carbon (C), and depending on the size of the star, the process might continue up to iron (Fe), but nothing heavier could fuse in a star and still release energy (11,13,20,21). The <sup>56</sup>Fe nucleus is the most stable nucleus known. The metal with respect to hydrogen is known as metallicity (14).

The ratio of % hydrogen and % helium divided by the mass number (56) of iron (Fe) (11) can be expressed as follow

$$(\%H/56) = 1.346392857 \tag{2}$$

$$(\%He/56) = 0.428571428 \tag{3}$$

The summation of (%H/56) and (%He/56) is expressed and found to be  $\sqrt{\pi}$  as shown by equation 4;

$$(\%H/56) + (\%He/56) = \sqrt{\pi} \tag{4}$$

Where, the value of  $\sqrt{\pi}$  equal **1.772453**.

Based on our previous work; Sayed DE/DM ratio (1), the dark energy to dark matter ratio was predicted and found to be a function in  $\pi$ :

$$(DE/DM) = \pi \tag{5}$$

Dividing equation 1 by 5, the ratio of hydrogen-helium to dark energy- matter is given by the following expression;

$$\{(H/He) / (DE/DM)\} = S\text{-Ratio} \tag{6}$$

This equation number 6, known as Sayed’s ratio (S-ratio), shows the correlation between the ratio of baryonic hydrogen and helium to non-observed dark energy and dark matter.

It was also found that the ratio given in equation 6 is also correlated with the summation given in equation 4 and the Golden ratio (22). This unique and global correlation can be expressed as follows

$$(1 + \sqrt{\pi} / 1.618033) = SGF \tag{7}$$

This symbol **SGF** is called Sayed’s Golden Formula and its value equals **(1.7134717)**. This law combines the **hydrogen-helium, dark energy-matter and the golden ratio** together. The terms in equation 7 are defined as follow:

**1 = (H/He)/(DE/DM)** , represents the ratio of hydrogen-helium to the dark energy - dark matter.

**$\sqrt{\pi} = (H/56) + (He/56)$**  represents the summation of hydrogen and helium percentage divided by 56 of Fe.

1.618033 is the Golden ratio of L. Fibonacci (the denominator in our equation 7). The equation 7 can be rewritten as:

$$SGF = \{2(1 + \sqrt{\pi}) / (1 + \sqrt{5})\} \tag{8}$$

The ratio (SGF) is similar to (frequency  $w/2\pi = 1.71347$  GHz) given in reference (23). Is there a relation?

#### IV. Results and discussion

Comparison of the published work dealing with hydrogen and helium content/percentage in the universe and solar system with the dark energy and matter is given in table 1

**Table 1:** The summary of hydrogen and helium in the universe in correlation with dark energy-matter

Item	NASA 16	Swine 14	Ethan 10	Milky 17	Stardat18	Wikepedi20	Ref 15	This work Sayed’s Theory
% Hydrogen	70.6	73	75-76	73.9	75	74.9	73	75.2911



% Helium	27.4	25	24-25	24	25	23.8	23	23.9659014
(H/He) ratio	2.5766	2.92	3.125–3.04	3.07916	3.00	3.147058	3.1739	$\pi$ (3.14159)
(DE/DM) (1)	---	---	---	---	---	---	----	$\cdot \pi$
(H/He)/(DE/DM)	----	----	----	---	---	----	----	<b>1</b>
<b>SGF</b>	----	---	----	----	----	----	----	$(1+\sqrt{\pi})/1.618$ = <b>1.7134759</b>

The values 3.1470588 given by (Ref. 20) and 3.125 of (Ref.10) are the most close to our predicted value  $\pi$  (3.14159) with difference of 0.1737 % and 0.5308 % respectively. Based on this table 1, it can be uniquely concluded that the hydrogen to helium ratio is correlated with the dark energy and matter ratio (S-ratio) in the universe and equal **unity**.

Comparison of hydrogen and helium ratio with iron (<sup>56</sup>Fe of 26 proton and 30 neutron) which is of cosmological (meteoric) origin as stated in the Holy **Quran** 1443 years ago (21) is given in the table 2.

**Table 2:** Results of hydrogen-helium to <sup>56</sup>Fe compared with the other published (calculated) values

Item	Ref.	NASA 16	SWINE 14	Ethan 10	Milky 17	Stardate 18	Wikeped 20	Ref. 15	<b>This work</b>
Iron Mass No.	56 (11)								
(H/56)	1.250714	1.30357	1.339285 1.357142	1.319642	1.339285	1.3375	1.303571	1.3444839	
(He/56)	0.489285	0.446428	0.42857 0.446428	0.428571	0.446428	0.425	0.410714	0.4279625	
(H/56)+(He/56)	1.449999	1.749998	1.7678557 1.8035708	1.748214	1.785713	1.7625	1,714285	$\sqrt{\pi}$ 1.7724538 1.7724464	
(H/56)/(He/56)	2.5766	2.92	3.125–3.04	3.07916	3.00	3.147058	3.201761	$\cdot \pi$	

Recently, the first “atoms” in the universe were not atoms at all—they were just nuclei that had not found electrons yet. The new compound of helium and hydrogen was called helium hydride or helonium (HeH<sup>+</sup>), the very first molecule (of any sustained abundance) in the universe. This was detected by SOFIA telescope of NASA (24). Keep in mind that I’m talking about space and time in our universe. Perhaps something unknown to us existed, and from that unknownness, our universe sprouted (25).

**V. Conclusion**

The universe is a unique and all its laws are correlated. This work predicted and calculated the hydrogen to helium ratio in the universe to be  $\pi$  (3.14159). Based on our previous work, the dark energy to dark matter ratio is also equal  $\pi$ . By correlating these results; it gives the conclusion that the ratio of hydrogen to helium and dark energy to dark matter in the universe is equal **unity**. This ratio (H/He)/(DE/DM) is called Sayed ratio symbolized as **S-ratio**. It was observed that the iron of mass number 56 is in correlation with hydrogen and helium content; their divided summation is specifically equal  $\sqrt{\pi}$ . A new and global law correlating the S-Ratio with hydrogen-helium-iron and the Golden ratio was perfectly deduced and called Sayed’s Golden Formula (**SGF**).



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*Great Creator - Allah, I need your support, power, protection, consolidation and endless sciences.*

**Conflict of interest**

There is no any conflict of interest concerning this article.

**References**

1. Sayed Ali El-Mongy, (2022) "Creator of the Universe Adjusted the Dark Energy/Dark Matter Ratio and Baryons to be Function In  $\pi$  and  $e\pi$ : Predicted and Deciphered by Sayed's Theorem", *Journal of Advances in Physics* Vol20 ISSN: 2347-3487, DOI: <https://doi.org/10.24297/jap.v20i.9223>
2. Sayed A. El-Mongy, (2021), "Revolutionary Approach for Fusion of the Classic, Relativity and Quantum field Theories: Sayed's Acceleration Equation and Probable Violation of  $E=mc^2$  ", *Journal of Advances in Physics*, Vol 19. DOI: <https://doi.org/10.24297/jap.v19i.9048>
3. Sayed A. El-Mongy, (2020), "Hawking Radiation is Nothing: Developed Correlation of Entropy with Black Hole Area", *Journal of Advances in Physics* Vol 18. DOI:<https://doi.org/10.24297/jap.v18i.8905>
4. Sayed Ali El-Mongy, (2020), "New Theorem and Formula for Circle Arc Length Calculations with Trigonometric Approach Application in Astrophysics", *Journal of Advances in Physics* Vol 17 DOI: <https://doi.org/10.24297/jap.v18i.8914>
5. Sayed A. El-Mongy, (2021), "Proposed Innovative Correlations for some Nuclear and Radiological Fields using Theorem of S. El-Mongy", *Journal of Advances in Physics* Vol 19 DOI: <https://doi.org/10.24297/jap.v19i.8946>.
6. Sayed A. El-mongy, (2022), "Innovative Theoretical Correlation of  $e\pi$  with Mass, Number of Atoms and Enrichment Percentage (%E) Using Sayed's Enrichment Formula", *Journal of Advances in Physics* Vol 20 DOI: <https://doi.org/10.24297/jap.v20i.9180>
7. Sayed A. El-Mongy, 2022 "Novel Arithmetic Equations for Mass Energy Equivalence, Newton's Rings Radius, Wavelength and Speed of Light, Fine Structure Constant and Ideal Gas Law Correlated with  $e\pi$  Based on Sayed's Theorem", *Journal of Advances in Physics* Vol 20 <https://doi.org/10.24297/jap.v20i.9214>.
8. James Webb Space Telescope: <https://webb.nasa.gov/content/science/firstLight.html>).
9. William Harris, 2010 "What is the universe made of ? ", Howstuffworks, (<https://science.howstuffworks.com/universe-made-of.htm>)
10. Ethan Siegel, 2014. "Why did the Universe start off with Hydrogen, Helium, and not much else? ", medium. [www.medium.com/starts-with-a-bang/](http://www.medium.com/starts-with-a-bang/))
11. [https://en.wikipedia.org/wiki/Abundance\\_of\\_the\\_chemical\\_elements#](https://en.wikipedia.org/wiki/Abundance_of_the_chemical_elements#), Updated 2022.
12. Origin of the Elements, 2018, "Science- A Guide to the Nuclear Science Wall Chart Contemporary Physics Education Project (CPEP) :<https://www2.lbl.gov/abc/wallchart/chapters/10/0.html>.
13. The birth of the universe, <https://louisville.edu/planetarium/research/implementation/visualization-scripts/high-school/hs-module-1>
14. <https://astronomy.swin.edu.au/cosmos/C/Chemical+Composition>
15. <http://hyperphysics.phy-astr.gsu.edu/hbase/Astro/hydhel.html>
16. .NASA,2018: <https://mobile.arc.nasa.gov/public/iexplore/missions/pages/solarsystem/sun.html>
17. Anne Helmenstine, 2021, "What Is the Most Abundant Element in the Universe?", *Science Notes*. <https://sciencenotes.org/what-is-the-most-abundant-element-in-the-universe/>
18. University of Texas McDonald Observatory 2022: <https://stardate.org/astro-guide/hydrogen-and-helium>,
19. [https://www.universeadventure.org/big\\_bang/element-composition.htm](https://www.universeadventure.org/big_bang/element-composition.htm), 2005.

20. <https://en.wikipedia.org/wiki/Sun>, 2022.
21. Holy Quran, 1443 ago, Chapter/ Surah 57, Title Iron, Verse/sign 25.
22. Abigail Van Essendelft, 2020, "The Golden Ratio: Mathematics in Nature and Art".
23. Zoltan Gyogy et al., 2022," Electrically driven spin resonance with bichromatic driving", arXiv:2206.00399v1.
24. Ryan C. Fortenberry, 2022, "The First Molecule in the Universe", Scientific American, A division of Springer Nature America, INC.
25. Abigail Pillitteri, 2017 ,"The birth and growth of the universe", The Universe Untangled Modern physics for everyone, Chapter 1, IOP Concise Physics, Morgan & Claypool Publishers,doi:10.1088/978-1-6817-4513-8ch1.

### Biography



Sayed Ali El-mongy is the slave of the Great Allah – God, the only Creator of everything. Prof. Sayed v. chaired Egypt nuclear regulatory authority (ENRRA). He awarded his Ph.D. from Mainz-Germany in the field of delayed neutrons assay due to fission of the fissile  $^{235}\text{U}$  / neutron capture of the fertile  $^{238}\text{U}$ . He participated in training, conferences and delegations to IAEA, USA, EU states. NATO, Russia, Arab Atomic Energy Authority. He has many theories in the field of black hole anatomy, expansion of the universe and dark energy and matter.