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# Scientific Interpretation of Qur'ānic Verses Pertaining to Physics

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## Abstract

“The Holy Qur’ān is the everlasting message of Allah that is revealed to the Prophet Muhammad (Upon whom peace and blessings on him) in Arabia. The verses of the Holy Qur’ān shed light on several scientific facts over and above fourteen hundred and fifty years ago those have discovered later. Physics has been included in four basic sciences of present age. The different verses of the Holy Qur’ān contain facts related to different branches of Science like Physics. If we only take a little scan of our present life styles it comes to know that it has become a fundamental science of our routine lives. We can hardly find a device where physics is not involved. The major theme of the research paper is to analyze the different verses of the Holy Qur’ān related to Physics. Today is the world of science when everything weighs in the balance of science to prove its worth. The main focus of the research is to throw light on the relationship between the physical phenomena and the verses of the Holy Qur’ān and present facts related to some major branches of Physics like Scales and Measurements, Mechanics, Sound, Light etc.

**Key Words:** Physics, Weights, Celestial bodies, Shadows, Sun, Forces.

## Introduction

The Qur’ān is a source of all knowledge, is not a new opinion. In the past many scholars are the exponents of this view. Imām al-Ghazālī in his book “Iḥyā ‘Ulūm al-Dīn” (The Revival of Religious Sciences) quotes Ibn Mas’ud saying:

وقال ابن مسعود رضي الله عنه من أراد علم الأولين والآخرين فليتدبر القرآن'

*“If one desires to have knowledge of sciences of the ancient and the modern times, he should ponder over the Qur’ān”.*

The Qur’ān is an ocean having no shore, and this wonder is mentioned in Sūrah Al-Kahf as:

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قُلْ لَوْ كَانَ الْبَحْرُ مِدَادًا لَّكَلِمَاتِ رَبِّي لَنَفِدَ الْبَحْرُ قَبْلَ أَنْ تَنْفَدَ كَلِمَاتُ رَبِّي وَلَوْ جِئْنَا بِمِثْلِهِ  
مَدَدًا<sup>2</sup>

*“Say: If the ocean were ink [wherewith to write out] the words of my Lord, sooner would the ocean be exhausted than would the words of my Lord, even if we added another ocean like it, for its aid.”*

Al –Sayūfī (d. 911/1505) too, has the same view. In his book “al-Itqān fī ‘ulūm al-Qur’ān”, he tries to argue that the Qur’ān contains all sciences. Commenting on verses of sūrah al-Anām:

مَا فَرَّطْنَا فِي الْكِتَابِ مِنْ شَيْءٍ

*“Nothing have we omitted from the Book”.<sup>3</sup>*

In some prophetic traditions this has also been mentioned by the Holy Prophet (Upon whom be peace and Blessings) such as the following:

The Prophet said, “There shall be evils”. He was asked, “What can save us from them?” He answered, “Allah’s Book; there is in it the news of what happened before you and the news of what shall happen after you.... he argues that the Qur’ān contains the sciences of the ancients and of the moderns.<sup>4</sup>

Many verses of the Qur’ān consist of invitations to ponder over the physical world as well as natural phenomena.

The physical world is made of matter and the study of matter and energy is called physics. It is the science “concerned largely with energy and its transformation,” in contrast with chemistry, which deals with matter and its transformations”.<sup>5</sup>

There are a number of verses in the Holy Qur’ān that mention physics and physical laws of nature. In this context Dr. Allama Muhammad Iqbal states in the prologue of his book entitled “The Reconstruction of Religious Thought in Islam”:

“Classical physics has learnt to criticize its own foundations. As a result of criticism the kind of materialism, which it originally necessitated, is rapidly disappearing; and the day is not far off when religion and science may discover hitherto unsuspected mutual harmonies. It must however, be remembered that there is no such thing as finality in philosophical thinking. As knowledge advances and fresh avenues of thought are opened, other views, and probably sounder views than those set forth in this lectures, are possible. Our duty is carefully watch the progress of

human thought, and to maintain an independent critical attitude towards it".<sup>6</sup>

Many Qur'ān verses deals with the several branches of physics like Scales and Measurements, Mechanics, Acoustics, Light, Thermodynamics and Electricity etc.

### **Literature Review**

The concept of science in the Holy Qur'ān has been discussed by many scholars of Past like Imām al-Ghazālī in "Iḥyā 'Ulūm al-Dīn and Sayūfī in al-Itqān fī 'ulūm al-Qur'ān". The twentieth century literature of Dr. Allama Muhammad Iqbal's "The Reconstruction of Religious Thought in Islam" and M M Qureshi M M Qureshi's research paper "Basic concepts of Physics in the perspective of Qur'ān" sheds light on the phenomena of physics in the Holy Qur'ān to some extent.

## **1. Scales and Measurements**

Muslims paid attention enthusiastically to the progress of measuring instruments, scales and weights, because they gained a wonderful incentive for this research from the Holy Qur'ān as scales and weights had been mentioned in it.

### **1.1. Accuracy of Weights**

An instrument to weigh is called balance. It can be defined as:

"Balance (in Arabic al-Mīzān) is the nomen instrument from wazana 'to weigh', which means to way in the ordinary sense and also to test the level of something, like the Latin librare".<sup>7</sup>

In Sūrah Al-A'rāf:

"Give just measure and weight, nor withhold from the people the things that are their due; and do no mischief on the earth after it has been set in order: that will be best for you, if ye have Faith".<sup>8</sup>

Because the Qur'ān strongly commands us to fulfill these rules properly. There is no injustice to others in Muslim society in any type of circumstances.

Justice is the base of whole system of universe. Unfairness and prejudices pervert the whole system and disturb the balance. In Sūrah Al-Anbiyā' Allah Almighty describes the perfection of the scales of the day of judgment that they will weigh the deeds like mustard seed:

"If there be [no more than] the weight of a mustard seed, We will bring it [to account]".

There are wonderful glad tidings of heavy scales for the people who have justice in their character and the light one for those who have injustice in their character.

In Sūrah Al-Qāri‘ah:

نَضَعُ الْمَوَازِينَ الْقِسْطَ لِيَوْمِ الْقِيَمَةِ فَلَا تُظْلَمُ نَفْسٌ شَيْئًا ۖ وَإِنْ كَانَ مِثْقَالَ حَبَّةٍ مِنْ خَرْدَلٍ أَتَيْنَا بِهَا ۖ وَكَفَى بِنَا حَاسِبِينَ<sup>9</sup>

*“Then, he whose balance [of good deeds] will be [found] heavy, Will be in a life of good pleasure and satisfaction. But he whose balance [of good deeds] will be [found] light, Will have his home in a [bottomless] Pit”.*

The above mentioned Qur’ānic verses emphasize that the whole generations of the Muslims are influenced by the accuracy of measurements. The *muhtasib* were hired by the authorities for check and balance in the society. The Arabs dedicated special consideration to prepare balances. Al-Bīrūnī, Al-Khāzinī, Al-Rāzī, Ibn al-‘Amīd, Ibn Sīnā, Aḥmad al-faḍl, Abū Ḥafṣ ‘Umar al-Khayyām made the balances.

## 1.2. The Balance of Celestial Bodies

Celestial bodies can be defined as:

“Celestial body (planetary system) in Arabic Al-Maṭla‘, the rising point of a celestial body, usually a star on local horizon”.<sup>10</sup>

The balance of celestial bodies or the solar system is because of two forces of nature that are centrifugal<sup>11</sup> and centripetal<sup>12</sup> force. These forces are balanced in such a way that these forces keep the positions of the sun and planets in balance. So the celestial bodies with heavy weights that come across to the millions of tons weight are kept in their exact position without any support.

In Sūrah R‘ad the balance of the Celestial bodies is mentioned as:

“Allah is He Who raised the heavens without any pillars that ye can see; is firmly established on the throne [of authority]; He has subjected the sun and the moon [to his Law]”.<sup>13</sup>

In Sūrah Luqmān:

خَلَقَ السَّمَوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا<sup>14</sup>

*“He created the heavens without any pillars that ye can see”.*

The Holy Qur’ān presents this balance between the celestial bodies, as a direction for human beings to act justly to each other, perceive the concept of balance and never transgress, nor go astray in any field of life.

Just as a small disproportion produces disorder between the centrifugal and centripetal forces that may be the reason of disaster of celestial bodies. Same situation can be observed in the human society that has a lot of injustice and imbalance. So these verses advise man to ponder over the forces working in this universe.

## 2. Mechanics

“It deals with the motion of material macroscopic bodies moving at comparatively small velocities much smaller than the velocity of light.<sup>15</sup> The root of the subject is reached to Aristotle and Archimedes. After them enhanced by Galileo and Sir Issac Newton.

The words **مِيكَانِيكَا** and **مِيكَانِيك** are used for mechanics in Arabic language.

### 2.1. Gravitational Force

The force of gravitation is the force that is acting on all things and attracts all things towards the center of the earth. It was formulated by Sir Issac Newton in the end of 17<sup>th</sup> century. The word (الجاذبية) **al-Jādhbīt** denotes gravitational force in Arabic.

All that there is on the surface of the earth the clouds and the entire atmosphere, travel with it in space and are bound together because of gravitation.

A verse of the Holy Qur'ān alludes to the gravitational pull of the earth. In Sūrah Al-Mursalāt Allah Almighty informs us in a fascinated way in the form of questioning:

لَمْ نَجْعَلِ الْأَرْضَ كِفَاتًا ﴿٢٥﴾ أَحْيَاءَ وَآمَوَاتًا<sup>16</sup>

“Have We not made the earth [as a place] to draw (pull) together. The living and the dead”.

The word **kafat** (كفَات) means place where anything is gathered, while (**كِفَاتًا**) used here means to suddenly gather things or pull together: now a days it is called gravity.<sup>17</sup>

### 2.2. Rotation of the Earth

The rotation of the earth is also an accepted law of physics.

In Sūrah Al-Namal:

وَتَرَى الْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ السَّحَابِ ۖ صُنِعَ اللَّهُ الَّذِي لَيْسَ أَتَقْنِ كُلَّ شَيْءٍ ۖ إِنَّهُ  
خَبِيرٌ بِمَا تَفْعَلُونَ<sup>18</sup>

*Thou seest the mountains and thinkest them firmly fixed: but they shall pass away as the clouds pass away: [such is] the artistry of Allah, who disposes of all things in perfect order: for he is well acquainted with all that ye do.*

The mountains seem to be motionless but actually they are in motion and their motion is the same type as the motion of clouds.

Haluk Nūr Baqī<sup>19</sup> says in this context:

“The mountains appear to be static, yet are actually in motion. This motion of the mountains is similar to the motion of clouds. The clouds are moving rapidly in the wind having approximately the same speed as the earth’s rotation. The earth core possesses a very slow motion which is the subject of fluid statics. Mountains progress like clouds in three dimensions and their motion is the result of a firm balance of two forces that is centripetal and other is centrifugal. There is only one possibility that in which this movement can possible that is the movement with the movement of earth. The clouds move with the air very fastly, their speed is same as the earth’s own cycle. The mountains go forward like clouds in three dimensions. All the stars and planets of the universe make their selves in balance because of two forces one is centripetal and other is centrifugal”.

## 4. Sound

Sound is related to Acoustics that is the branch of physics. The audible frequency of sound for human being lies in between 20 to 20,000 Hz. The human ear cannot hear the sound that has the frequency above 20,000 Hz are called ultrasonic and the frequency lower than the 20 Hz is called infrasonic. Some sounds are pleasant for human ear is called musical sounds and some are not pleasant for human ear e. g. the sound of generator and machines. In Arabic the word (الصوت) al- Ṣāyut denotes the Sound.

### 4.1. Ultrasonic

The Acoustics deals with the study of ultrasonic. Vibrations of frequencies greater than the upper limit of the audible range<sup>20</sup> for humans are called ultrasonic. The word sonic denotes ultrasound waves of very high amplitudes. It means the sound waves those have a pitch<sup>21</sup> above the upper limit of human hearing is called ultrasonic.

### 4.2. Hearing of God

Samī‘ (سميع) is the attributive name of Allah Almighty that describes the hearing power of Allah. The hearing of God is different from human

beings. In the perspective of ultrasonic the Qur'ān explains the hearing of God in Sūrah Kahf:

“Say: Allah knows best how long they stayed: with Him is [the knowledge of] the secrets of the heavens and the earth: how clearly He sees, how finely He hears [everything]”.<sup>22</sup>

The above mentioned verse of the Holy Qur'ān shed light on the fact that Allah Almighty hears all types of sounds even that types which cannot be heard by human being that are ultrasonic or infrasonic.

## 5. Light

Light is the study of physical aspects of light, its properties, working and use of optical instruments. The word (ضوء) al- dāū' denotes light in Arabic language.

### 5.1. Concept of Light in two Prominent Celestial Bodies

The Holy Qur'ān in Sūrah Yūnus described the moon light and sun light in an eloquent way:

هُوَ الَّذِي جَعَلَ الشَّمْسُ ضِيَاءً وَالْقَمَرَ نُورًا

*“It is He Who made the sun to be a shining glory and the moon to be a light [of beauty]”*.<sup>23</sup>

Allah Almighty uses two words for explaining the nature of light from sun and moon. The word ضياء (ḍiyā') is used for sun light and the word نور (nūr) is used for moon light. It means sun light and moon light both are different types. M M Qureshi in his research paper entitled “Basic concepts of Physics in the perspective of Qur'ān” sheds light on this phenomena as:

“Now ḍiyā means light, brightness or gleam; while nūr means shine, to see glow in a distance, to take flight or flee (which words having different meanings are used for light from sun and moon: the use of these two words indicates the degree of precision of expression in describing the light from sun as it is its own original light, while light from the moon is a reflected light”.<sup>24</sup>

Maurice Bucaille said about these two words ḍiyā and nūr that there is a little difference between ḍiyā and nūr in his renowned book ‘The Bible the Qur'ān and Science’:

“The Sun is a shining glory (ḍiya') and the Moon a light (nur). This translation would appear to be more correct than those given by others,



where the two terms are inverted. In fact there is little difference in meaning since *diya'* belongs to a root (dw') which, according to Kazimirski's authoritative Arabic/French dictionary, means 'to be bright, to shine' (e. g. like a fire). The same author attributes to the substantive in question the meaning of 'light'.<sup>25</sup>

Similarly it is stated in Sūrah Al-Nūh:

“And made the moon a light in their midst, and made the sun as a [Glorious] Lamp?”<sup>26</sup>

In this verse, sun is said to be سراجا (Sirājan) (i. e) that is lamp. Sirāj means burning wick, lighted lantern, lamp, candle stick, chandelier, torch, etc.<sup>27</sup>

In the interpretation of this verse Sultan Bashir Mahmūd observes:

“He translated the سراجا as dazzling lamp, and said in the olden times, many cultures regarded it as one of the gods. The Holy Quran shattered this false view by calling it a creation of Allah. Analogy of the blazing hot dazzling lamp also means that sun like a lamp is the source of heat and light. Twentieth century science proved that it is an atomic lamp whose fuel is hydrogen gas. When atoms of hydrogen under extreme pressures and temperatures strike each other they fuse together to make helium. In this process some of their mass is converted into energy. Thus violent fusion sections keep going on all the times in the sun. It is the same reaction that takes place in the hydrogen bombs”.<sup>28</sup>

In Sūrah Al-Furqān:

وَجَعَلَ فِيهَا سِرَاجًا وَقَمَرًا مُنِيرًا

“Lamp and a Moon giving light”.<sup>29</sup>

The explanation of above two verses Maurice Bucaille writes: “Here the moon is defined as a body that gives light (*munīr*) from the same root as *nūr* (the light applied to the Moon). The Sun however is compared to a torch (*siraj*) or a blazing (*wahhaj*) lamp”.

The word *nūr* is used in different meaning in different places in Holy Qur’ān e. g. in Sūrah Al-Nūr:

Allah is the Light of the heavens and the earth. The Parable of His Light is as if there were a Niche and within it a Lamp: the Lamp enclosed in Glass: the glass as it were a brilliant star.<sup>30</sup>

In this verse of the Qur’ān must have motivated research in different aspects of light like optics, spectrum, reflection and refraction also. Dr. Maurice Bucaille observes in this context:

“The subject in this verse is projection of light on to a body that reflects it (glass) and gives it glitter of a pearl like a planet that is lit by the sun”.<sup>31</sup>

### 5.2. Distance in Term of Light Years

Distance in term of light years is being measured after many centuries from the revelation of the Qur'ān that is described in this verse of Sūrah Al-Sajdah:

“He rules [all] affairs from the heavens to the earth: in the end will [all affairs] go up to Him, on a Day, the space whereof will be [as] a thousand years of your reckoning”.<sup>32</sup>

### 5.3. Description of Shadows

“A shadow is made when an object blocks light. The object must be opaque<sup>33</sup> or translucent<sup>34</sup> to make a shadow. A transparent<sup>35</sup> object will not make any shadow, as light will pass straight through it”<sup>36</sup>.

Shadow can also be defined as: “A dark shape that appears on the surface when someone or something moves between the surface and a source of light.”<sup>37</sup>

In Sūrah al-Naḥl:

“Do they not look at Allah's creation, [even] among [inanimate] things, How their [very] shadows turn round, from the right and the left, prostrating themselves to Allah, and that in the humblest manner?”<sup>38</sup>

The sun is a natural source of light. It seems to be move across the sun throughout the day. In fact, it just look like it does, that because the earth is spinning. The sun casts (makes) the longest shadows at the beginning and the end of the day when the sun is lowest in the sky. The sun casts the shortest shadows at the mid of the day. When it is highest in the sky. The process of making of shadows with the different positions of the sun is discussed in Sūrah Al-Ra'd:

“Whatever beings there are in the heavens and the earth do prostrate themselves to Allah [Acknowledging subjection], - with good-will or in spite of themselves: so do their shadows in the morning and evenings”.<sup>39</sup>

The above mention verse of the Holy Qurān shows the fact about the expansion and contraction of shadows. The term ( امتداد الظلال ) (ونقصانها) is used for expansion and contraction of Shadows in Arabic.

### 5.4. Zodiacal Light

A band of sky along which the sun, the moon, and most of the planets move. It is divided in two twelve parts which each part named for a nearby constellation. <sup>40</sup>A faint hazy cone of light, often visible with in

the zodiacal band in the west just after sunset or in the east just before the sun rise apparently caused by the reflection of light from meteoric particles in the plane of the ecliptic.<sup>41</sup> The Holy Qur'ān describes the phenomena of astrological/Zodiacal light in this verse of Sūrah Al-Barūj:

وَالسَّمَاءِ ذَاتِ الْبُرُوجِ

“By the sky, [displaying] the Zodiacal Signs.”<sup>42</sup>

Commenting on this verse Dr. Abdul Wadūd writes in his book captioned “Phenomena of Nature and Qur'ān”:

“Zodiacal light is the cone shaped glow, sometime rivaling the Milky way, seen after sun set during spring evenings or before sun rise in the autumn. It is conspicuous from the countries with clearer skies. It seems to be due to the reflection of sun light from a swarm of meteoric particles surrounding the sun, lying in the plane of the ecliptic and extending beyond the orbit of the earth”.<sup>43</sup>

And Marmaduke Pickthall translated the *dhati al-Burūj* as ‘holding Mansions of stars’. Engineer Sultan Bashir explains the above-mentioned verse as:

“The heaven that is full of clusters of star-constellations points out the fact that non-symmetrical distribution of stars through the universe. This phenomenon is also proved by science”.<sup>44</sup>

(البروج في السماء) Al-Barūj fe al-Samā means the clusters of stars.

## Conclusion

The research paper offers a comprehensive and systematic account of some acute concepts of several branches of the Physics relates to scales, measurements, mechanics, sound and light. These concepts have been discussed in the Holy Qur'ān in different manners before many centuries. The great scholars of the past like Imām Sayūṭī, Imām al-Ghazālī and the legend of twentieth century Dr. Allama Iqbal were in the favor of authenticity of scientific facts presented in the Holy Qur'ān. The Holy Qur'ān sheds light on these facts when there were no inventions, discoveries and modern technologies, however science testifies these facts later. So it can be said that the Holy Qur'ān is the fact and science is the search of facts. The Holy Qur'ān is kul (total) and science is a part. The extreme position of science is the start of the Holy Qur'ān. The fact is that the words of Allah Almighty are not in the range of science. Further research should be made in this context to open the door of new discoveries.

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- 9 Al-Qur'ān 21:47
- 10 M. Zaki Kirmani & N. K Singh, *Encyclopedia of Islamic Science and Scientists*, (New Delhi: Global Vision Publishing, 2005), vol. 1, P.168.
- 11 Force that pulling away from the center.
- 12 Force attracts towards the center.
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- 18 Al-Qur'ān 27:88
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- 20 that is, greater than about 20 kilohertz.
- 21 It is the characteristic of sound the help of which we distinguish between a shrill and grave sound.
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- 23 Al-Qur'ān 10:5
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- 28 Mahmood , Sultan Bashir, *The Spirit of the Holy Qur'ān*, (Islamabad: Dar-ul-Hikmat International, 2009), p.95.
- 29 Al-Qur'ān 25:61
- 30 Al-Qur'ān 24:35
- 31 Maurice Bucaille, *The Bible Qur'ān and Science*, p.157.
- 32 Al-Qur'ān 32:5
- 33 Opaque material do not let any light pass through them. They blocked the light e. g. wood.

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- 34 Translucent material let some light through but they scatter the light in all directions. So we can clearly see through them e. g. tissue papers.
- 35 Transparent material let light pass through in straight lines, so we can see clearly through them e. g. glass.
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