# ASTROPHYSICS &the HOLL OURAN

Prof.Abdul Rashid Khan



# **Astrophysics & The Holy Quran**

By: Prof. Abdul Rashid Khan

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## **PREFACE**

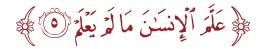
# بِسْمِ الله الرَّحْمٰنِ الرَّحِيْمِ

In the name of Allah, Most Gracious, Most Merciful

The Holy Qur'an is the eternal Message of Allah to mankind of the worlds, revealed to Muhammad, the Messenger of Allah (P.B.U.H), more than fourteen hundred years ago. This Book deals with man's code of conduct and true life style from cradle to grave in particular and the whole universe in general. The Holy Qur'an solves all the problems of mankind in this world, and the Hereafter, because it enshrines all the rules and regulations for our guidance and instructions.



"And He (Allah) taught Adam the names of all things" [Sura Al-Bagara, Ch.2, Verse 31]



"And He (Allah) taught man that which he knew not." [Sura Igraa, Ch.96, Verse 5]

From these verses it is clear that Allah, the Almighty, revealed to Adam (P.B.U.H) all knowledge of creation of the universe. As Man is the progeny of Adam (P.B.U.H), therefore, the knowledge of everything such as Physics, Astrophysics, Metaphysics, Chemistry, Biology, Genetics etc., is well written on the genes of Man.



The man is made up of about trillion of cells. It has been discovered that every human cell is composed of 46 chromosomes, 23 from female side and 23 from male side. Chromosomes carry a set of instructions called genes. The genetic writing called Genome is the pre-programmed picture of an individual's personality and destiny. Whenever, a scientist makes a scientific discovery, it is not external discovery but is already present in his genome. It means that without the guidance of Allah (SWT) the discovery is not

possible. Hence, Allah, the Almighty, guides scientists, irrespective of their color, caste, creed, and religion, because research work is the fundamental right of every human being.

The Holy Qur'an clearly establishes the fact that science and the Qur'an are not opposed to each other because the Holy Qur'an is full of scientific explications.

The whole structure of the universe is full of His Signs but only men of knowledge (scientists, philosophers etc.) observe and understand them. In this regard, the Holy Qur'an says:



"And He (Allah) has subjected to you, as from Him, all that is in the Heavens and on the Earth: behold; in that are the Signs indeed for those who reflect." [Sura Jathiya, Ch.96, Verse 5]



"Behold! In the creation of the Heavens and the Earth, and the alternation of the Night and Day, certainly there are Signs for men of understanding, [Sura Al-'Imran, Ch.3, Verse 190]

The verses (3-4) invite the believers to observe and contemplate upon all that is in the universe. In other words, the Muslims must do research work in all fields of science as they did in the early epoch of the Islamic history.

In this book I have made an attempt to introduce the relationship between the Holy Qur'an and Astrophysics to the science-students in particular and science-conscious people in general. In compiling this book I have consulted a number of books and journals on Physics as well as on religion. The list of references has been given at the end of the book. The verses of the Holy Qur'an and topics of Astrophysics (common to both areas) have been brought together in the form of separate chapters. My own comments on various points in this regard are in the form of possibilities and speculations. Allah, the Almighty, knows the best.

The experience of 36 years, 5 months and 12 days gained in teaching Physics at F.Sc, B.Sc, and Quantum Mechanics at M.Sc. level has been used in compilation of this book. Every endeavor has been made that all the chapters must contain up-to-date scientific knowledge.

It will not be justified, if I do not mention the late my father in law Ch. Muhammad Iqbal and Professor Sakhawat Ali (May Allah bless their souls and rest in Heaven (Jannat). My father in law left bequest of the Holy Qur'an (English Translation and Commentary Edition 1937, by A. Yusuf Ali) to be gifted to me. Prof. Sakhawat Ali gave me the book "A BRIEF HISTORY OF TIME," Edition 1992, by STEPHEN W. HAWKING and encouraged me to write the book "Astrophysics and the Holy Qur'an". I am also very thankful to Mr. Khurrum Sajjad who gifted me the book "Qur'anic Prism" 5th Edition, 2007 by Engineer Abdul Hakeem Malik. I made ample use of them in the compilation of this book.

I am very grateful to Prof. Dr. Abdul Rashid Khan, Ex-Principal, Govt. College of Commerce, Faisalabad, Hafiz Prof. Dr. Muhammad Din Qasmie (Retired), Dr. Abdus Samie, Prof. Malik Muhammad Aslam, Ex-Chairman, Department of English, G. C. University, Faisalabad and Hafiz Qari Asif Raza, Lecturer G. C. University, Faisalabad for many useful suggestions, guidance and help in preparing the draft of this book for the press. I am thankful to Prof. Khalil-ur-Rehman, Ex-Principal, Govt. College, Toba Tek Singh, Prof. Ahtram-ul-Haq, Govt. Postgraduate College of Science, Faisalabad, Prof. Sardar Muhammad, Govt. College, Samanabad, Faisalabad, Prof. Faqir Muhammad Ch. (Retired), Prof. Muhammad Amjid (Retired), Prof. Muhammad Hanif (Retired), and Prof. Atteeq Khan Shahid, Ex-Chairman, Department of Physics, G.C. University, Faisalabad for their valuable contribution in preparation of the draft of this book. I am also very thankful to Mr. Mahmood Ali for composing the book

May Allah, the Almighty accept my endeavour in this regard and I pray that this book may become the source of enlightenment for the readers. May Allah (SWT) forgive my shortcomings and sins (Aameen!).

Criticism and suggestions for improvement of this book will be welcome and highly appreciated.

### Prof. Abdul Rashid Khan

May, 2012



## INTRODUCTION

We are living now-a-days in the age of science. The intelligent human beings want to know where did they come from? Where did the universe come from? Will the universe come to an end, if so, how? Is the universe static or dynamic, if dynamic, is it expanding or contracting? What is time? When was it started? Will it come to an end? What are Black Holes? What are the forces of Nature? What is the smallest piece of matter? What is the status of man in the universe? Are there ultimate limits for human beings to know about something?

The majority of people especially in the third world are unable to answer these questions. When they are asked such questions, most of them answer with a shrug or with a vague and ambiguous knowledge. On the basis of Holy QUR'AN as well as scientific knowledge, I have tried my level best to answer these questions in this book "Astrophysics and the Holy QUR'AN".

In the very first verse of the Holy QUR'AN revealed to Prophet Muhammad (Peace and Blessings of Allah be upon him), he was directed to read.



"1- Read! In the name of your Lord and Cherisher, Who created 2- Created man from a clot of congealed blood: 3- Read! and your Lord is the most Bounteous, 4-Who taught by the pen, 5- Taught man that which he knew not." [Sura Alaq, Ch.96, Verse 1-5]

The importance of reading, writing and acquiring knowledge has been explained in this verse in a very forceful and direct manner. It is obligatory for every Muslim to obey Lord's commandments. The importance of knowledge is so much emphasized in Islam that the Prophet Muhammad (Peace and Blessings of Allah be upon him) had the constant prayer:



"O my Lord! Advance me in knowledge." [Sura Ta-Ha, Ch.20, Verse 114]

The Prophet Muhammad (Peace and Blessings of Allah be upon him) announced that it is the obligation (sacred duty) of every Muslim (man and woman) to seek knowledge.

The human knowledge can be divided into two types:

- (i) Revealed knowledge
- (ii) Acquired knowledge

The source of revealed knowledge is Wahi or Revelation from Allah, the Almighty. Allah had passed on the revealed knowledge to the mankind through His prophets or messengers (peace be upon them).

According to the Holy QUR'AN:

# ﴿ وَلَقَدْ بَعَثْنَا فِي كُلِّ أُمَّةٍ رَّسُولًا أَنِ آعَبُدُواْ اللَّهَ وَٱجْتَنِبُواْ ٱلطَّاغُوتَ ﴾

"And we have sent a messenger, in every community saying, "Serve Allah, and keep away from evil" [Sura Nahl, Ch. 16, Verse 36]

The final revelation of this series is the Holy QUR'AN revealed to Prophet Muhammad (Peace and Blessings of Allah be upon him), the last in the series of Prophets.

According to the Holy QUR'AN:

"Muhammad is not the father of any of your men, but (he is) the Messenger of Allah and the seal (last) of the Prophet" [Sura Al-Ahzab, Ch. 33, Verse 40]

Since the revelation preserved in its original form is the Holy QUR'AN only, in accordance with the commitment of Allah, the Almighty, for its protection.

According to the Holy QUR'AN:

"We have, without doubt, revealed the Reminder (Message); and We will surely be the Guardian." [Sura Al-Hijr, Ch. 15, Verse 9]

"Those who reject the Message (Reminder) when it comes to them, should know that in fact, it is a Mighty Book. 42- No falsehood can approach it from before or from behind it: It is a revelation from the One, Who is Wise and Praise Worthy." [Sura Ha-Mim Sajda, Ch. 41, Verses: 41-42]



"Certainly it is the most honorable QUR'AN, 78- In a book well-guarded, 79- None shall touch it save the purified ones: 80- A revelation from The Lord of the worlds." [Sura Waqia, Ch. 56, Verse 77-80]



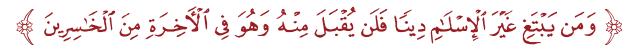
"And recite (and follow) what has been revealed to you of the Book of your Fosterer: there is none who can change His words, and you will not find any refuge other than Him. [Sura Kahf, Ch. 18, Verse 27]

The Holy QUR'AN is the only source of revealed knowledge. However, this knowledge has been explained and supplemented by the sayings of the Holy Prophet Muhammad (Peace and Blessings of Allah be upon him) as he would not speak but with the consent of Allah. Hence this knowledge is the absolute truth. The revealed knowledge, the Holy QUR'AN, deals with man's code of conduct, behaviour and life style from cradle to grave in particular and the whole universe in general and is referred to as the final religion, Islam.

According to the Holy QUR'AN we have:



"This day I (Allah) have perfected your religion for you, and completed My favor upon you and have chosen for you Islam as your religion" [Sura Maida, Ch. 5, Verse 3]



"If anyone chooses a religion other than Islam (submission to Allah), it will not be accepted from him; and in the Hereafter he will be one of the losers." [Sura Al-i-'Imran, Ch. 3, Verse: 85]

According to these Verses, Islam is the universal message of Allah to the whole mankind and Prophet Muhammad (P.B.U.H) is the last and final messenger of Allah till the end of the universe. Therefore, Allah will not accept any religion other than Islam. If anyone who follows any religion other than Islam, he will be one of the losers in the Hereafter (as well as in this world).

The acquired knowledge is based upon thoughts, observations and experimentations. This knowledge deals with the whole universe and all the creations of Allah, the Almighty, and is referred to as SCIENCE.

There is no scientific fact, which may be absolutely true. Some theories and laws which are scientifically correct now-a-days might not be acceptable in future in the light of future scientific experimentations and discoveries. There is always a room for the improvement of acquired knowledge. A new discovery or new circumstances may change the entire face of the relative truth, whereas the revealed knowledge (absolute truth) is true for all times to come.

Let us explain this point by giving a few examples from the scientific knowledge.

As long as 340 B.C. the Greek philosopher Aristotle believed that all the matter in the universe was made up of four basic elements; Earth, air, fire and water. He also believed that matter was continuous, that is, one could divide a piece of matter into smaller and smaller bits without any limit: one never came up against a particle of matter that could not be divided further. However, a few Greeks such as Democritus held the view that matter inherently consists of large number of different particles called 'atoms' (the word atom means 'indivisible' in Greek).

For centuries the above concepts about matter remained valid without any real evidence on either side, till in 1803, when the British chemist and physicist, John Dalton enunciated an atomic theory, according to which the matter was made up of tiny indivisible particles called 'atoms' which retain all the properties of

the element. He also pointed out the fact that the chemical compounds always combine in certain proportions could be explained by grouping together atoms to form units called molecules.

In 1891, J.J. Thomson performed the famous experiment in which he passed the electric current through a gas at low pressure which led to the discovery of electrons (negatively charged particles), coming from within the atoms themselves. In this way the concept of indivisibility of atom was lost at the end of the 19th century. This experiment led to the conclusion that the atoms were not indivisible and they could be subdivided into positively and negatively charged particles.

In 1897, J. J. Thomson determined the charge to mass ratio e/m, for electrons, the value of which is 1.7588 X 10<sup>11</sup> C/kg.

In 1898, J. J. Thomson enunciated the atom model, which is called J.J. Thomson Atom Model. According to this Model:

- 1. The atom was consisted of a large sphere of positive charge with negatively charged electrons embedded in it. The atom was considered more or less like a fruit cake, the positive part being the cake and the electrons being the fruit pieces.
- 2. On the whole, atom was neutral.
- 3. The atom had a uniform density.
- 4. There was no empty space inside the atom.
- 5. The electrons were in static equilibrium with positive charge.

In 1909, Robert A-Millikan determined the charge on an electron, the value of which is  $1.6 \times 10^{-19}$  C. Knowing the charge; it became possible to determine the mass of electron using e/m value of the electron. The mass of electron is  $9.1 \times 10^{-31}$  kg.

In 1911, the British Physicist Ernest Rutherford devised an experiment to test the Thomson Atom Model. He bombarded a thin sheet of gold with a stream of fast moving alpha particles and studied their deflections after colliding with the gold atoms. Finally he showed that atoms of matter do have internal structure. From the results of the experiment he gave atom model, which is called Rutherford Atom Model. According to this Model:

Atom does not have uniform density. Almost entire mass of the atom is concentrated in a tiny part of the atom called the nucleus

The nucleus is positively charged and is located at the centre of the atom.

The electrons cannot be static; otherwise they must be pulled in by the nucleus due to electrostatic force. The electrons must be in dynamic equilibrium and moving in circular orbits around the nucleus. The centripetal force is provided by the electrostatic force of attraction of the nucleus.

In 1919, Rutherford bombarded nitrogen with alpha particles and detected a new positively charged radiation emitted from it. Rutherford gave name to the radiations as Protons. The proton comes from the Greek word meaning 'first' because it was believed to be the fundamental unit from which the matter was made up of. The charge on proton is 1.6 X 10<sup>-19</sup> C and its rest mass is 1.67 X 10<sup>-27</sup> kg or 1836.12 me, where me is the rest mass of an electron. Thus it was discovered that the nucleus contained protons.

In 1932, James Chadwick discovered neutrons inside the nucleus while he was studying the scattering of alpha particles from Beryllium target. It is a neutral particle and its rest mass is 1838.65 me. Thus neutron is 2.53 me heavier than proton. Chadwick received the Nobel Prize for this discovery. Thus an atom consists of a central part called nucleus surrounded by the electrons moving in circular orbits around the nucleus. The diameter of nucleus is the order of 10-14m. The nucleus contains protons and neutrons. These particles are called 'nucleons'.

In 1964, two U.S. Physicists Murray Gell-Mann and George Zweig independently proposed the Quark Theory. According to this theory all hadrons (baryons and mesons) are composed of elementary point like entities which Gell-Mann called 'QUARKS'. The three quarks are labeled as u, d, s and are given the names up, down and sideways or strange quark respectively. The u quark carries a charge  $+\frac{2}{3}$  e, the d quark carries a charge  $-\frac{1}{3}$  e and the s quark carries a charge  $-\frac{1}{3}$  e. The quark comes in three colors red, green and blue. To each quark there corresponds an anti-quark with opposite charge and color. According to quark theory, proton is composed of two u<sub>s</sub> and one d quark, i.e.,  $P^+$  = udu or uud. Similarly, neutron is composed of two d<sub>s</sub> and one u quark i.e.,  $n^0$  = ddu or udd. Thus proton and neutron are not elementary particles but they do have internal structure. In other words they consist of quarks. Later on three more quarks were discovered. Theses quarks are labeled as c, t, b and are given the name charm, top or truth, bottom or beauty quark respectively. The charge on c, t, b are  $\frac{2}{3}$  e,  $\frac{2}{3}$  e,  $\frac{2}{3}$  e, respectively.

From the above discussion it is clear that how theories and models had been replaced by new theories and new models.

Let us consider another example from the field of Geology and Biogeography.

There were two major hypotheses about the nature and extent of land-masses and ocean-basin in the field of Geology and Biogeography: -

- 1. The hypothesis of the permanence of the land-masses and ocean-basins.
- 2. The hypothesis of the continental drift.

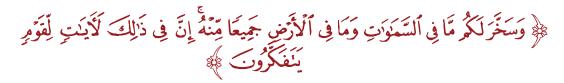
The hypothesis of the permanence of the land masses and ocean basins was favored by most of the biogeographers, geographers and the geologists for about first half of the twentieth century.



The hypothesis of the continental drift has become prominent because of research in the field of Geology and Biogeography in the second half of the twentieth century. If we look at the world map carefully, we see that the continents 'fit into' one another like pieces of jigsaw puzzle. This is because these continents used to be joined together but have been drifting apart. Under the hypothesis of continental drift, the very face of our world was different far back in the past. Today, the scientists can actually measure the rate at which the continents are drifting away a few centimeters per year. The scientists even can estimate how long it has taken the continents to move apart up to their present positions.

From the above discussion it is quite clear that how the second hypothesis has replaced the first one.

Scientific discoveries provide means for the betterment of mankind as well as for the destruction of mankind. Scientific knowledge is better for the understanding of Allah's creation and for strengthening of our faith. The Holy Prophet Muhammad (Peace and Blessings of Allah be upon him) has laid great emphasis on acquiring knowledge. The Holy QUR'AN has clarified this fact as:



"And He has subjected to you, as from Him, all that is in the Heavens and on the Earth: behold; in that are the Signs indeed for those who reflect." [Sura Jaiya, Ch. 45, Verse 13]

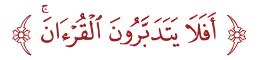
When human beings make efforts for scientific discoveries, Allah guides them in their discoveries. In other words He (Allah) is ever present to guide the scientists.

We should never think that science and Islam are opposed to each other. The lack of agreement between the two on certain facts means that our present scientific knowledge is not in accordance with revealed knowledge. The future researches and discoveries might remove the controversy.

Again and again Allah, the Almighty, stresses in the Holy QUR'AN for observation and contemplation.

"Say: "Behold (observe) all that is in the Heavens and on the Earth;" But neither Signs nor Warners profit those who believe not." [Sura Yunus, Ch.10, Verse 101]

In this verse Allah says to Muhammad, O Muhammad say to people to behold (observe) all that is in the Heavens and on the Earth. But neither Signs nor the Warners (of Allah) can give benefits to those who do not believe.



"Do they not contemplate upon the Holy QUR'AN?" [Sura Nisaa, Ch. 4, Verse 82]



"Say: Can the blind be held equal to the seeing? Do you not think?" [Sura Al-Anam, Ch. 6, Verse 50]

# ﴿ أَفَلَا يَنْظُرُونَ إِلَى ٱلْإِبِلِ كَيْفَ خُلِقَتُ ﴿ آَلَكُ وَإِلَى ٱلسَّمَاءِ كَيْفَ خُلِقَتُ ﴿ آَلَ السَّمَاءِ كَيْفَ رُفِعَتُ ﴿ آَلُ اللَّهِ اللَّهِ اللَّهِ اللَّهِ اللَّهِ اللَّهِ اللَّهِ اللَّهُ اللِّهُ اللَّهُ اللللْمُ اللَّهُ اللللْمُولِيَّا اللللْمُ اللللْمُ اللللْمُ اللللْمُ الللللْمُ الللللْمُ الللللْمُ اللللْمُ اللللْمُ الللللْمُ الللللْمُ الللللْمُ الللللْمُ اللللللْمُ الللللْمُ الللللْمُ اللللْمُ الللللْمُ الللللْمُ الللللْمُ اللللْمُ اللللْمُ الللللْمُ اللللْمُ الللللْمُ الللللْمُ اللللْمُ اللللْمُ اللللْمُ الللللْمُ الللللْمُ الللللِلْمُ اللللِمُ اللللْمُ اللللْمُ الللللْمُ اللللْمُ الللْمُ اللللْمُ اللل

(iii) 17- "Do they not see at the camels, how they are made? 18- And at the Sky, how it is raised high? 19- And at the Mountains, how they are fixed firm? 20- And at the Earth, how it is spread out?" [Sura Gashiya, Ch.88, Verse 17-20]

﴿ إِنَّ فِي خَلْقِ ٱلسَّمَوَتِ وَٱلْأَرْضِ وَٱخْتِلَافِ ٱلنَّيْلِ وَٱلنَّهَادِ لَآيِنَتِ لِآفُولِي ٱلْأَلْبَدِ اللَّ ٱلَّذِينَ اللَّهُ وَالنَّهَادِ لَآيَنَتِ لِأَوْلِي ٱلْأَلْبَدِ اللَّ ٱلَّذِينَ اللَّهُ وَيَكْمَا وَقُعُودًا وَعَلَى جُنُوبِهِمْ فِي خَلُولِهِمْ فِي خُلُقِ ٱلسَّمَوَتِ وَٱلْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَلَا المَطِلَا خُلُق ٱلسَّمَوَتِ وَٱلْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَلَا المَطِلَا اللَّهُ مَا خَلَقْتَ هَلَا المَطلَلا اللَّهُ اللَّهُ عَذَا اللَّالِ ﴾

190- "Behold! In the creation of the Heavens and the Earth, and the alteration of the Night and Day, certainly there are Signs for men of understanding, 191- Who remember Allah standing, sitting and lying down on their sides, and reflect on the creation of the Heavens and the Earth, O, our Fosterer! You have not created this in vain, You are glorified (above all) so save us from the punishment of fire." [Sura Al-i-Imran, Ch. 3, Verse 190-191]



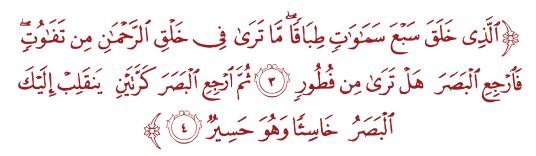
There are 250 verses related to legal matters whereas there are some 750 verses in the Holy QUR'AN which stress the believers (Muslims) to study Nature and to reflect. In other words, the Muslims must do research work (theoretical as well as experimental) to understand the creations of Allah, the Almighty.

The Holy QUR'AN is not a Book of Science but it is a Book of 'Signs' because the verses in the Holy QUR'AN are called 'Aayaat' which means Signs. There are 6666 verses in the Holy QUR'AN, over 1000 of them deal with scientific facts. This shows that the Holy QUR'AN is full of scientific explications. Let us discuss one of the scientific facts, the expansion of the universe.

In 1915, Einstein proposed the general theory of relativity. In this theory, he suggested that it is hard to construct static models of the universe. In 1929 Edwin Hubble and Guth made the remarkable discovery that the distant galaxies are moving rapidly away from each other. In other words the universe is expanding. The speed at which these galaxies are moving away, may (in the course of this perpetual expansion) increase from fractions of the speed of light to speed faster than this.

The Holy QUR'AN speaks about this scientific fact as follows:

"With power and skill We have built the Heaven: Verily, We are expanding it." [Sura Zariyat, Ch. 51, Verse 47]



3- "He Who (Allah) created seven Heavens one above the other: you do not see, in the creation of All Merciful, any imperfection. So turn your gaze again: do you see any fissure (flaw)? 4- Again turn your gaze a second time: your gaze will come back to you dazzled and discomfited, in a state of worn out."

[Sura Mulk, Ch. 67, Verse 3-4.]

This is the faith of all physicists; the deeper they seek, the more is their wonder excited, the more is the dazzlement for their gaze.