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BLACK HOLES FROM THE PERSPECTIVE OF ASTRONOMY AND THE HOLY QURAN

In this article, in order to study black holes in detail, we looked at the view of the Qur'an and astronomy about black holes. In the Holy Quran, the word Najm and its derivatives are used 13 times and Kowkab 5 times in singular and plural form, often meaning star, and in several verses, it is mentioned under the titles of Masabih and Buruj. Stars evolve during their lifetime until they die. One of the types of death of stars is turning into black holes, and black holes are one of the most important astronomical phenomena that occur after the death of large stars. Black holes are the strangest objects in the universe, which are rightly named as such; because no light is reflected from them that would bring us information. In addition, most black holes are the final stage of life of the brightest stars in the universe, supergiant stars that have become supernovas. The infinitely compact core that remains after the explosion has such a powerful gravity that even light cannot escape from it; So this body is black and since nothing can have a speed faster than the speed of light, whatever falls on this body will be trapped there forever. It is interesting that in the Qur'an there is a complete Surah called Surah An-Najm, the purpose of its revelation is to express the truth of the revelation and the greatness of its source, to prove the belief of monotheism and refute the belief of polytheism. In the first verse of this chapter, the Qur'an mentions the fall of a star and describes the characteristics of a place in a way that is similar to what we consider a suitable description of a black hole. In addition, in verses 1-2 of Surah takwir, in order to depict the Day of Judgment with the destruction of the universe after it was stable and firm, it is mentioned that the sun will gather, the stars will darken, and fall and their lives will end on that day. Is. Therefore, this object is considered as a hole in space.

Key words: *Black holes, Holy Quran, science, space, photons.*

Introduction

Black holes represent the ultimate degree of compactness to which a stellar configuration can evolve [5]. As is widely known, black holes are astrophysical objects so dense that the light cannot escape them. The idea that such objects might exist predates the era of modern physics. Newtonian physics may be used to predict the existence of "dark stars", stars that possess gravitational field so strong, that the light they radiate is unable to escape [3]. A region of space where the gravitational field is so strong that no matter or radiation can escape. This star forms when a massive star runs out of fuel and can no longer support itself under its own gravity.

It collapses in a supernova explosion, leaving behind a very dense core that is thought to eventually end up as a point or singularity. It is surrounded by an event horizon, which is a theoretical surface that encompasses an area from which there is no escape. Black holes are also thought to form at the center of galaxies through the gradual capture of stars in that region. Black holes are described in general relativity as regions where the curvature of space is particularly pronounced [1]. A black hole captures all light falling onto it and it is not possible to obtain a direct image of them, an observer will see a dark spot in the sky where the BH is supposed to be located. Due to the strong bending of light rays by the Black Hole gravity, both the size and the shape of this spot are different from what we naively expect on the basis of Euclidean geometry from looking at a non-gravitating black ball. Also, the authors tried to give a complete list that have historically been used to refer to the visual appearance of a black hole and related concepts and they noted that despite the different names and different physical formulation of the problem, all these concepts are strongly intertwined [2]. Black holes will exist in space-time and falling into a black hole will result in you leaving the observable universe [1; 3]. Stars are huge balls of hydrogen and helium. Despite their almost identical composition, their final fate can be significantly different. The real action inside a star takes place in its core, where conditions are so intense that atomic nuclei fuse together to form heavier nuclei. The energy released in this way supports the star against the crushing of its own gravity, but eventually the fuel runs out and the nuclear reactor in the star's core shuts down, and once the energy source is exhausted, the star may collapse under its own gravity, as we shall see. Since no light can pass through a black hole and come out the other side, the discovery confirms Albert Einstein's theory that massive objects like black holes and neutron stars orbit space. This particular black hole, 800 million light-years away, warped space so much, that astronomers could see X-ray bursts flickering behind it [3; 6].

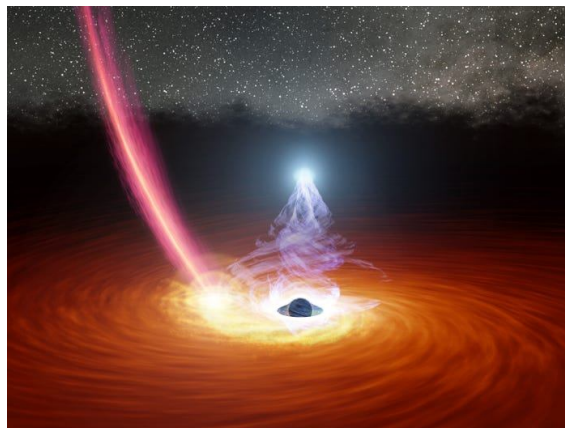


Figure 1. An image shows a black hole with a corona (ball of white light) that is engulfing material flowing into the black hole. NASA/JPL-Caltech

The darkening of the sun and the stars from the perspective of the Qur'an and astronomy

The closest star to Earth is the Sun. The sun, along with the planets and moons of the solar system, was born about five billion years ago. From that time until today, it has continuously illuminated the earth with its light, which is the source of life. The sun, a huge sphere of hot gases, alone has 745 times the mass of all the planets in the solar system and about 99.8% of the total material of the solar system. Only the remaining 2 % are the surrounding planets. The diameter of the sun is 109 times that of the earth, which is more than 300,000 times that of the earth. The sun's energy is produced in its very hot center, which has a temperature of 15 million degrees Celsius. It takes 4.6 billion years for nuclear fuel to be converted into energy in this furnace, and exactly the same amount of its life is left. It will take five million years for the sun to expand and become hotter and hotter. Then the waters of all the oceans will evaporate, and life on earth will be destroyed. And the earth also burns due to the intense heat of the sun and is completely destroyed. Over time, it is possible that the Earth will be swallowed by the outer layers of the sun. The sun will shrink little by little, and eventually it will become a white dwarf and hit the earth, or it will be smaller than what we had imagined [2; 4; 6]. It is mentioned in the first verse of Surah al-Takwir :



Figure 2. The first verse of Surah al-Takwir

That is, when the sun becomes entangled. It means the passing of sunlight and its setting. According to the Qur'an, at the end of the world, the brightest source of light in our solar system, which is the source of light for all the planets, will shut down and gather, and other stars will also suffer the same fate. Who have considered this verse one of the scientific miracles of the Qur'an. The Qur'an's interpretation of the darkening of the sun and the dimming of the stars, one of which is the sun, is completely correct. Today's scientists believe that the energy of the sun that spreads in space is obtained from nuclear combustion, whose fuel is hydrogen and its ash is helium. For this reason, every day and night, three hundred and fifty thousand million tons of this sphere's weight is reduced, causing it to gradually become thin and dim [<https://quran.com/>]. The existing system of the planets also collapses, as if the balance of attraction and repulsion related to their "mass" and "speed of movement" is disturbed, and perhaps this is what is stated in the Holy Quran. It means that at that time the stars will scatter and collapse (Anfatar-2).



Figure 3. The first verse of Surah al-Takwir

It is also stated in Surah Al-Qiyamah verse (7 to 8) that the moon will be without light and the sun and the moon will gather:



Figure 4. Surah Al-Qiyamah verse (7 to 9)

This is a brief description of the chaotic condition of the system of the universe that will prevail in the first stage of Resurrection. The darkening of the moon and the joining of the moon and the sun together can also mean that not only will the moon lose its light, which is borrowed from the sun, but the sun itself will become dark and both will become devoid of light similarly [<https://myislam.org/>]. The gathering of the sun and the moon may

be due to the loss of the balance of "attraction" and "repulsion" and the moon will be attracted to the main center, i.e. the sun. We will end this speech by referring to another verse of the Qur'an in this regard, it says:

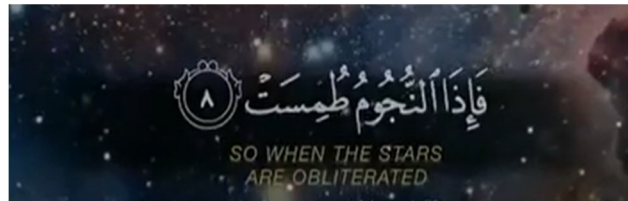


Figure 5. Verse 8 of Surat Al-Mursalat

Currently, all these issues are going on in the world, but it happened gradually, but at the end of the world, it will intensify and with a series of quick and sudden events, this system will collapse and end [<https://quran.com/>].

Conclusion

The results of the findings show that stars evolve during their lifetime, and one of the types of star death is turning into a black hole, which is formed after the death of big stars. Gravity, the compressed carcass of the star in question, which has an infinite amount of dirt, bends the space-time around it to such an extent that a black hole or a black hole emerges. The Holy Qur'an also mentions the gathering of the sun, the scattering and collapse of the stars on the Day of Resurrection, when everything will be destroyed, and the merging of the sun and the moon and the disappearance of the light of both on that day. Even today, this phenomenon has occurred one after the other and confirms these statements.

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ЧЕРНЫЕ ДЫРЫ С ТОЧКИ ЗРЕНИЯ АСТРОНОМИИ И СВЯЩЕННОГО КОРАНА

В статье в целях детального изучения черных дыр мы рассмотрели взгляды с точки зрения Корана и астрономии на черные дыры. В Священном Коране слово Наджм и его производные употребляются 13 раз, а Ковкаб – 5 раз в единственном и множественном числе, часто означая звезду, и в нескольких стихах оно упоминается под названиями Масабих и Бурудж. Звезды эволюционируют в течение своей жизни, пока не умрут. Одним из видов смерти звезд является превращение в черные дыры, а черные дыры являются одним из важнейших астрономических явлений, которые происходят после смерти крупных звезд. Черные дыры – самые странные объекты во Вселенной, которые по праву названы таковыми, потому что от них не отражается свет, который мог бы принести нам информацию. Кроме того, большинство черных дыр являются заключительной стадией жизни самых ярких звезд во Вселенной, сверхгигантов, ставших сверхновыми. Бесконечно компактное ядро, оставшееся после взрыва, обладает такой мощной гравитацией, что даже свет не может вырваться из него. Таким образом, это черное тело, и поскольку ничто не может иметь скорость выше скорости света, все, что упадет на это тело, останется там навсегда. Интересно, что в Коране есть полная сура под названием Сура Ан-Наджм, цель ее откровения – выразить истинность откровения и величие его источника, доказать веру в единобожие и опровергнуть веру в многобожие. В первом стихе этой главы Коран упоминает падение звезды и дается характеристика места падения с помощью описания, похожего на то, что мы считаем подходящим под описание черной дыры. Кроме того, в стихах 1-2 суры Таквир при изображении Судного дня и разрушения Вселенной, которая была стабильной и незыблемой, упоминается, что солнце соберется, звезды померкнут и упадут, и их жизнь закончится в этот день. Следовательно, это явление рассматривается как дыра в пространстве.

Ключевые слова: черные дыры, Священный Коран, наука, космос, фотоны.
