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Surah Al-kahf (The Cave) And The Core Of Relativity - Like Never Before : How The Quran Foretold Spacetime Curvature, Gravity Wells, Wormholes, And Why The History Of Science Must Be Rewritten

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Surah Al-Kahf (The Cave) and the Core of Relativity - Like Never Before: How the Quran Foretold Spacetime Curvature, Gravity Wells, Wormholes, and Why the History of Science Must Be Rewritten

Mohd Mudassir

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ABSTRACT: This research investigates the advanced scientific concepts of space-time curvature, wormholes, and time dilation as fundamental natural principles described in the Quran centuries before their modern discovery. Surah Al-Kahf is particularly significant in this context, as it directly addresses wormholes, space-time curvature, and gravitational effects. To fully comprehend this, firstly we must understand what "Al-Kahf" truly represents in the Quran. This study explores the scientific properties of Al-Kahf and its relation to relativity, gravitational lensing, and space-time warping, etc. While modern science views Spacetime Curvature, wormholes and time dilation etc., as extraordinary phenomena, The Quran presents them as fundamental aspects of the universe, and are also utilized in divine operations—just as it describes the water cycle, planetary motion, and celestial mechanics etc. These principles are not isolated mentions but are woven throughout the Quran, highlighting the Quran's deep engagement with the fabric of space-time. Among the key Quranic verses that encapsulate this concept, Surah Al-Kahf 18:17 [7] stands as the most crucial, as it directly defines and completes the key properties of Al-Kahf by describing the Spacetime Curvature, bending of light and gravitational lensing effects etc., in a most fascinating and unbelievable way, without any illogical interpretation but direct meaning of verses, from existing translations like Sahih International etc. and we have just converted it into a visual diagram/figure. While an understanding of Al-Kahf as a space-time phenomenon is possible from other Quranic descriptions, verse 18:17 serves as the "ULTIMATE KEY" to establish this concept with certainty. If one fully comprehends Quran 18:17, with Quran 18:25,29 etc. then the true nature of Al-Kahf becomes undeniably clear—revealing its nature of space-time curvature, time dilation, and gravitational lensing etc. This verse is 18:17 not only foundational but also the pinnacle of understanding, ensuring that any doubts regarding Al-Kahf's relation to relativity and space-time distortions are completely resolved. Furthermore, once one will understand what "Al Kahf" truly represents, it will unlock a deeper understanding of entire (CHAPTER) "Surah Al-Kahf" which can ultimately help us to understand & reveal the secrets of the universe deeply including wormholes, space-time curvature, and gravitational effects, as Al-Kahf is treasure of these things. It is a complete dedicated chapter about wormholes, space-time curvature, and gravitational effects etc. Without grasping the concept of Al-Kahf from the initial part of the chapter, the rest of Surah Al-Kahf cannot be fully comprehended. This foundational understanding is not just limited to this chapter—it extends to the entire Quran, where relativity, time dilation, gravitational lensing, and space-time curvature/Anomalies are referenced in various verses. When we will establish Al-Kahf as a space-time concept, it will illuminate the meaning of other parts of Surah Al-Kahf and numerous other Quranic verses that describes these cosmic principles throughout the Quranic text. By integrating Quranic insights with General Relativity and modern astrophysics, this paper challenges conventional narratives of scientific history, advocating for a reassessment of the Quran's contributions to humanity's understanding of space-time and relativity. This interdisciplinary approach highlights that the Quran contains detailed direct descriptions of these cosmic phenomenon (wormholes, space-time curvature, space-time distortions and gravitational effects etc.) that align with cutting-edge physics, reinforcing the need for a historical reevaluation of scientific knowledge.

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Keywords: Space-Time Curvature; General Relativity; Wormholes; Time Dilation; Quranic Cosmology; Gravitational Lensing; Black Holes; Surah Al-Kahf; Quantum Physics; Islamic Science

1. INTRODUCTION

Modern physics has revolutionized our understanding of **space, time, and gravity**, particularly through **Einstein's Theory (Einstein, A. 1915) [1]**, which describes **spacetime curvature, black holes, wormholes, and time dilation**. These concepts have provided groundbreaking insights into **the structure of the universe** and the **behavior of matter under extreme gravitational forces**.

However, a careful analysis of Surah Al-Kahf and other Quranic verses reveals descriptions of these physical phenomena, suggesting that these principles were clearly described in the Quran long before their formal discovery in modern science. The Quran frequently references gravitational effects, time dilation, and space-time distortions as part of the natural order created by God, just as it describes the water cycle, planetary orbits, and cosmic expansion etc.

1.1. THE SIGNIFICANCE OF SURAH AL-KAHF IN SPACE-TIME PHYSICS

Among all Quranic chapters, Surah Al-Kahf holds a unique place in its references to space-time phenomena. The chapter contains multiple narratives that closely align with key discoveries in modern physics, some of important verses are given below -

- The People of the Cave (18:17) – (MOST IMPORTANT) – It directly/clearly explain how light bents near gravitational well/pit, space time curvature, in a very simple/amazing/unbelievable/fascinating way. In just few words it explains the core of the Theory of Relativity "in detail". "In detail" means that we can extract huge technical details from this single verse, And to make it clear, it's not interpretation of meaning what we are talking about here but a direct description. This verse is actually "interpreted *differently"* because people can't comprehend it's direct meaning without interpretation, but actually it don't need interpretation to understand but just its direct meaning blended with "thinking" only.
- The People of the Cave (18:25) – Demonstrates a time dilation effect where 300 years pass externally while the sleepers experience only a short duration (Day or a part of a day) (Surah Al-Kahf, 18:29) [8][9]. This aligns with gravitational time dilation, a fundamental prediction of Einstein's Theory of General Relativity (Einstein, 1915)[1].
- The Junction of Two Seas (18:60-18:63) – Suggests the existence of a wormhole-like connection between two regions of space-time, as seen in the mysterious disappearance and revival of the fish (Surah Al-Kahf, 18:60-63)[10]. This matches the Morris-Thorne wormhole model (Morris & Thorne, 1988)[4].
- Dhul-Qarnayn's Journey (18:86, 18:90) – Describes a black hole event horizon, where the sun appears to set in a dark, murky spring (Surah Al-Kahf, 18:86)[11], and a possible wormhole exit, where the sun is found rising elsewhere (Surah Al-Kahf, 18:90)[12].

To fully comprehend these scientific descriptions, it is crucial to first **understand what "Al-Kahf" represents in the Quran**. Al Kahf is not just a physical cave—it signifies **a region of extreme space-**

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time curvature where time flows differently. Without recognizing AL-Kahf as a **space-time phenomenon**, one **cannot fully grasp the deeper meaning of Surah Al-Kahf**.

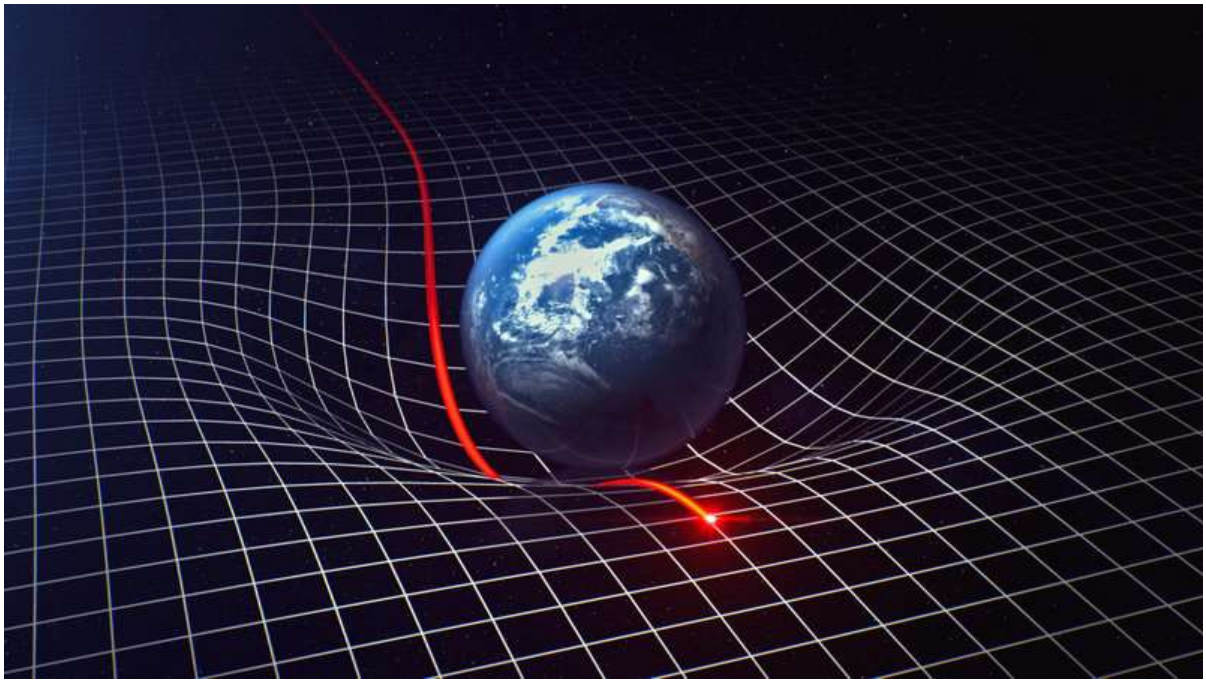

Figure 1a – SHOWS HOW LIGHT FOLLOW CURVED PATH IN SPACETIME CURVATURE.

1.2. QURANIC REFERENCES TO SPACE-TIME CURVATURE BEYOND SURAH AL-KAHF

While Surah Al-Kahf is particularly focused on space-time physics, these concepts are found throughout the Quran. Some of them are given below.

- **Time Dilation (Surah Al-Baqarah 2:259)** – The story of **Prophet Uzair (A.S.), where he experiences a vastly different passage of time than the external world**.
- **Gravitational Confinement (Surah Al-Ma'idah 5:24-26)** – The confinement of **Musa's (A.S.) people for 40 years, potentially representing a localized space-time anomaly**.
- **Eternal Time Loops (Surah Al-Furqan 25:11-14)** – The **concept of human and Hell at opposite sides of wormhole**, where **time behaves differently** and is experienced cyclically.
- **Stable Shadows (Surah Al-Furqan 25:45)** – A description that matches **gravitational lensing effects, where light is bent, keeping shadows static**.
- **Instantaneous Travel (Surah An-Naml 27:38-40)** – The **transportation of the Queen of Sheba's throne in an instant**, closely resembling **wormhole travel or quantum teleportation**.

1.3. PURPOSE OF THIS RESEARCH

This study aims to:

- **Analyze Surah Al-Kahf's references to space-time curvature and wormholes**.
- **Define AL-Kahf as a space-time gravity well.**
- **Establish that relativity and gravitational effects are fundamental concepts in the Quran**.

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- **Compare Quranic descriptions with modern physics to demonstrate their alignment**.
- **Advocate for a reassessment of scientific history in light of Quranic knowledge**.

The findings of this study challenges the conventional view that relativity, time dilation, and space-time distortions were only discovered in the 20th century. Instead, it presents compelling evidence that the Quran contains scientific insights into space-time phenomena that align with modern physics and even beyond current understanding, necessitating a historical reevaluation of how we perceive scientific progress.

2. UNDERSTANDING KAHF: THE SPACE-TIME GRAVITY WELL

The Quran presents "Al Kahf" as a unique place (Quran, Surah Al-Kahf, Chapter 18), but what exactly is it? Rather than defining it outright, let Al Kahf itself describes its own nature through its properties given in Quran.

To understand "**Al KAHF"**, when we read **Quran, Surah Al-Kahf, Chapter 18,** we must ask questions like following, as mentioned in Al-Kahf:

- **What kind of place causes time to slow down significantly inside, while time outside flows normally or much faster? (Quran 18:19,18:25)**
- **Where does light bend, altering the apparent position of objects? (Quran 18:17)**
- **What kind of place makes a "day or part of a day" inside equivalent to "300 years" outside (Surah Al-Kahf, 18:25)[9]? (Quran 18:19,18:25)**
- **Where does even a small motion, like a dog's leg stretching, take an unnaturally long time to complete? Where does motion inside appear to be in extreme slow motion when viewed from the outside? (Quran 18:18, Slow motion dog's legs stretched)**
- **Why sleeping people can make you flew away from them, and can fill you with horror/terror? Normally sleeping people are harmless. (Quran 18:18)**
- **What is junction of two seas? (Quran 18:60)**
- **How did cooked/dead fish made its path into the sea? (Quran 18:61,63)**
- **How That slave of God knew the information beyond time? (Quran 18:65)**
- **How Dhul-Qarnayn reached setting and rising place of sun, and how he met different people (species/aliens?), one of them didn't have protection against sun? (Quran 18:86-97)**
- **Why it was needed to cover ears of sleeping people? (Quran 18:11)**
- **Etc. Etc. Etc.**

These specific properties point to a well-known astrophysical phenomenon:
A gravity well or a wormhole—a space-time region where time dilation and extreme gravitational effects occur.

General Relativity predicts that time slows down in a strong gravitational field (Einstein, 1915)[1], which aligns with the Quranic description of the People of the Cave experiencing time dilation.

The Quran explains this in a simple way that even a layman can understand. The description of Al Kahf itself naturally leads us to the conclusion that it is a space-time anomaly— a wormhole or a gravity pit. But above that Quran 18:17 is a ultimate seal of conformity on this concept. Before exploring its scientific basis, let us analyze Surah Al-Kahf 18:17, which amazingly describes Al Kahf's space-time properties.

2.1. SURAH AL-KAHF 18:17 – THE KEY VERSE IN UNDERSTANDING CORE NATURE OF AL-KAHF

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وَتَرَى ٱلشَّمْسَ إِذَا طَلَعَت تَّزَٰوَرُ عَن كَهْفِهِمْ ذَاتَ ٱلْيَمِينِ وَإِذَا غَرَبَت تَّقْرِضُهُمْ ذَاتَ ٱلشِّمَالِ وَهُمْ فِى فَجْوَةٍ مِّنْهُ ۚ ذَٰلِكَ مِنْ ءَايَٰتِ ٱللَّهِ

"And you would see the sun, when it rose, inclining away from their cave to the right, and when it set, passing away from them to the left, while they lay in an open space therein. That was from the signs of Allah."

— Sahih International) (Surah Al-Kahf, 18:17)**[7]**

"**You could have seen the [light of the] sun as it rose, moving away to the right of their cave, and when it set, moving away to the left of them**, while they lay in the wide space inside the cave. (This is one of God's signs: those people God guides are rightly guided, but you will find no protector to lead to the right path those He leaves to stray.)"

— M.A.S. Abdel Haleem (Surah Al-Kahf, 18:17)**[7]**

This verse describes **gravitational lensing gravity well/pit and space-time warping in unbelievable way**, where light behaves unusually in the presence of **a strong gravitational field (Thorne, 1994)[2]**.

SCIENTIFIC ANALYSIS: WHAT HAPPENS IN A TIME-DILATED REGION?

FLASHLIGHT AND ITS APPARENT POSITION

To understand this we have to understand the scenario described in this verse Quran 18:17 with the help of following usual example of "weight on fabric" with an addition of a flashlight to demonstrate spacetime curvature and light bending.

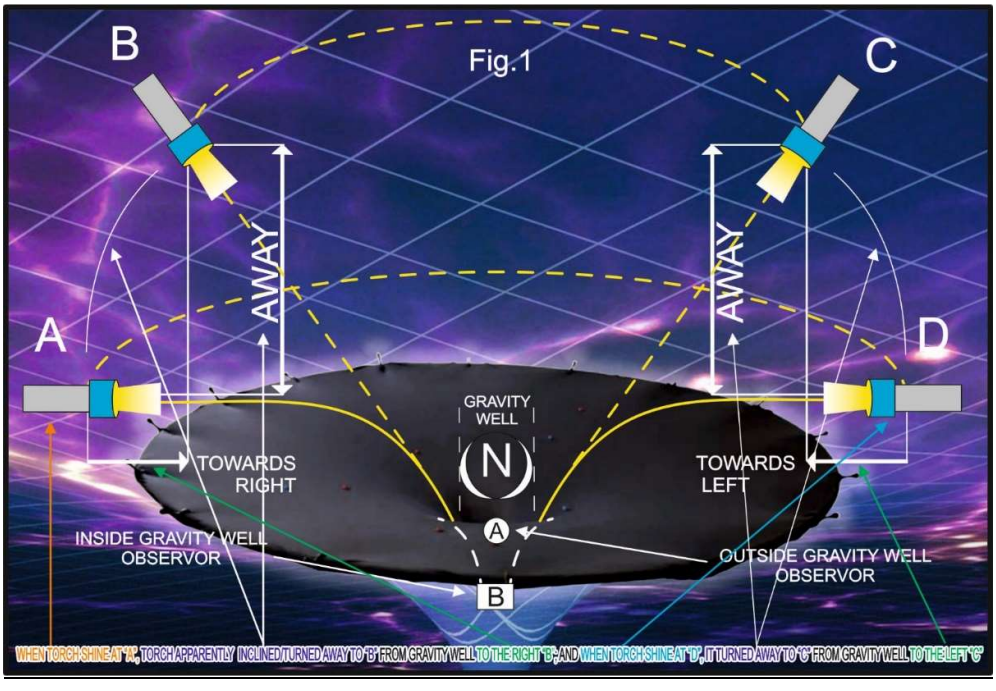

Figure 1.b - FLASHLIGHT AND ITS APPARENT POSITION.

1. **Position A (Parallel to the Fabric, Moving Right and Away from Gravity Well):**

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- Initially, the flashlight is positioned at point A, and the light travels parallel to the fabric (representing flat space-time). The direction of the light is **towards the right**.
- As the light moves closer to the gravity well, it will be bent due to the curvature of space-time.

2. **Position B (Apparent Position Due to Light Bending):**
   - As the light bends toward the gravity well, its apparent (Flash light) position will shift from point A to point B.
   - The **apparent position** of the flashlight at point B will appear to be **towards the right** and **away from the gravity well** due to the curvature, for an external observer **"A"**. This is because the space-time around the gravity well is distorting the light's path.
3. **Position D (Parallel to the Fabric, Moving Left and Away from Gravity Well):**
   - When the flashlight is positioned at point D, and the light again travels parallel to the fabric (representing flat space-time). The direction of the light is **towards the left**.
   - As the light moves closer to the gravity well, it will be bent due to the curvature of space-time.
4. **Position C (Apparent Position Due to Light Bending):**
   - As the light bends toward the gravity well, its apparent (Flash light) position will shift from point D to point.
   - The **apparent position** of the flashlight at point C will appear to be **towards the left** and **away from the gravity well** due to the curvature, for an external observer **"A"**. This is because the space-time around the gravity well is distorting the light's path.

VERSE 18:17 WRITTEN BELOW AND ITS DIRECT EXPLANATION IN FIGURE

Now with above understanding we can easily understand/comprehend following **Quranic verse 18:17**, with the help of following diagram -

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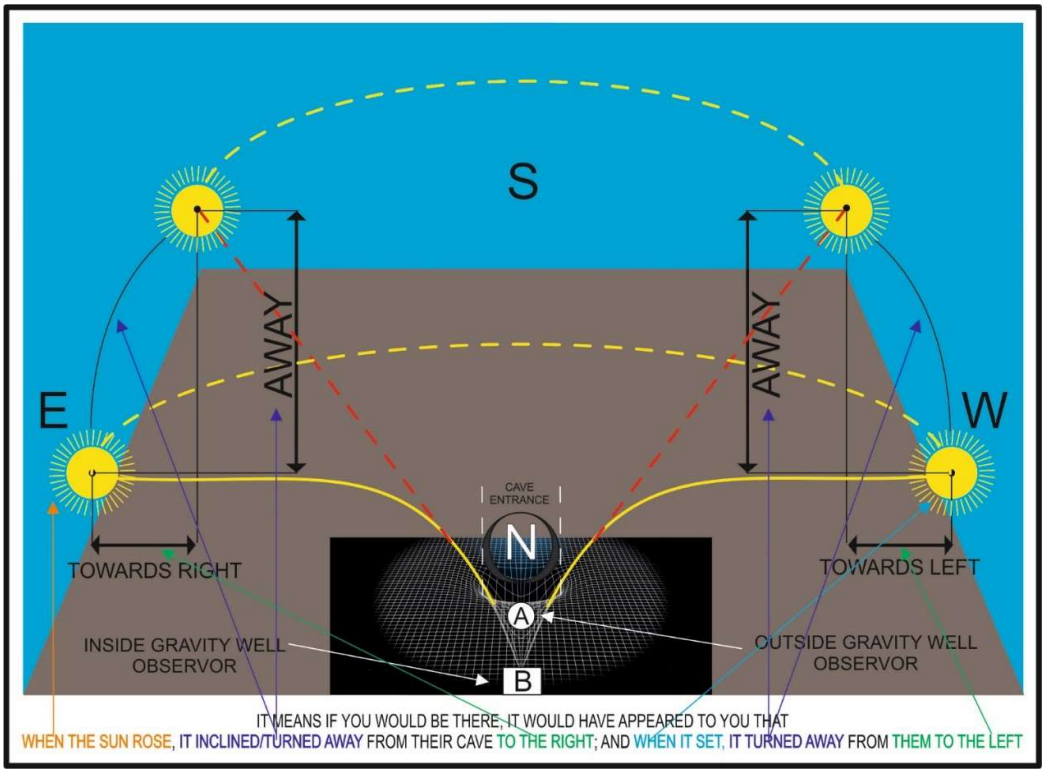

Figure 2. – SHOWS VERSE 18:17 (WRITTEN BELOW) AND ITS DIRECT EXPLANATION IN FIGURE.

IT SHOWS THE SUN AND ITS APPARENT POSITION (RELATIVITY/SPACETIME CURVE).

AT SUNRISE (LIGHT FROM THE EAST): THE SUN APPEARS SHIFTED SOUTHWARD, AWAY FROM THE OBSERVER ("A"), AND TOWARD THE WEST (RIGHT) ,

AT SUNSET (LIGHT FROM THE WEST): THE SUN AGAIN APPEARS SHIFTED SOUTHWARD, AWAY FROM THE OBSERVER ("A"), AND TOWARD THE EAST (LEFT).

TO UNDERSTAND THIS DEEPLY, FIRST WE HAVE TO UNDERSTAND WITH CLARITY THE SCENARIO DESCRIBED IN THIS VERSE (QURAN 18:17).

- **Observer ("A")** is facing south will see the **Sun moving East to West**, which is one of the condition in this scenario.

  As we know sun rises from the East and Goes towards west.
- As **observer must be facing south**, his back is towards the Al-Kahf (The Cave) opening/entrance.
- Al-Kahf is in **vertical plane** ,with its mouth/opening/door/**entry facing south**.
- When sun rises, **it appears (Apparent position) moved away from the vertical plane of the cave and towards the right,** (this happens due to bending of light because of space time curvature).
- When sun about to **set it appears (Apparent position) moved away from the vertical plane of the cave and towards the left**, (this happens due to bending of light because of space time curvature).

The above figure/diagram directly illustrates Quran 18:17 without any unnecessary or illogical interpretation. Light Bending and Time Dilation in a Wormhole/Gravity Well (Earth-Based) in vertical plane with its opening/entrance facing South. It also describes a region where the movement of light and the passage of time are significantly altered.

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- **The Sun's movement appears unusual** – It does not shine normally into the Al-Kahf (The Cave) but bends its light. This can be clearly understood with the help of **gravitational lensing**.
- **Inside the cave, time flows differently** – People inside **perceive only a day or part of a day**, while 300 years pass externally (18:19, 18:25).
- **Objects and beings inside move in extreme slow motion** – As we know Quran describes the **dog with its legs stretched at the entrance etc.** (suggesting slow motion similar to a deep gravitational well).

This verse serves as the **core foundation of Surah Al-Kahf**, signifying that without a deep understanding of this verse, one cannot fully grasp/comprehend the comprehensive knowledge embedded within the entire **Surah Al-Kahf** and other verses of different chapters, which could lead us to unveil **further secrets of nature, hidden knowledge** and the intricate workings of the universe.

There are so many verses in Quran related to time dilation, spacetime distortion, but this verse stands as a **masterpiece** in itself, encapsulating profound scientific concepts such as **relativity, light bending, space-time curvature, gravitational wells/pits**, and more with detail and precession way before Relativity was explained by Einstein, And Relativity description is so obvious in Quran that after this research it looks like that Einstein may have comprehended/grasped it from Quran, and formulated its equations.

Einstein, though a physicist, required mathematical tools to formalize this vision. It was his classmate and mathematician, Marcel Grossmann, who introduced him to the advanced mathematics of tensor calculus and Riemannian geometry—essential to model the curvature of spacetime. This framework, originally developed by the great mathematician Bernhard Riemann, he provided the geometric basis needed to describe gravity not as a force, but as a deformation of spacetime itself.

Later, the eminent German mathematician David Hilbert contributed by independently deriving the gravitational field equations using variational principles, reinforcing the structure of Einstein's General Relativity. While Einstein provided the physical insight, it was these mathematical giants—Grossmann, Riemann, and Hilbert—who helped translate his ideas into rigorous mathematical form."

DETAILED SCIENTIFIC EXPLANATION

Now to understand this verse and full Surah Al-Kahf even more deeply we will try to understand Light Bending and Time Dilation in a Wormhole/Gravity Well (Earth-Based) in vertical plane with its opening/entrance facing south, and its effects on internal and external observer, in the light of Quran - Al Kahf and our Scientific understanding of relativity.

GRAVITATIONAL LENSING IN AN EARTH-BASED WORMHOLE/GRAVITY WELL

A localized gravity well that would introduce **extreme space-time curvature**, affecting both **light propagation and time flow** [19,20].

Gravitational lensing occurs when space-time curvature alters the trajectory of light. This effect is described by:

$$\boldsymbol{\theta = \frac{4GM}{bc^2}}$$

This describes the **deflection angle** θ, which quantifies the amount by which light is bent as it passes near a gravitational source (in this case, a wormhole or another massive object). Let's break down the components:

- G: The **gravitational constant** ($G = 6.674 \times 10^{-11}\,\mathrm{m^3\,kg^{-1}\,s^{-2}}$).
- M: The **effective mass** of the gravitational object (in this case, a wormhole's mass).

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- b: The **impact parameter**, which is the closest distance from the light ray to the center of the gravitational source (the distance at which the light passes closest to the wormhole or massive object).
- c: The **speed of light** ($c \approx 3 \times 10^8$ m/s).

Explanation of Gravitational Lensing:

- **Deflection of Light**: When light passes near a massive object like a wormhole or black hole, the spacetime curvature caused by the object bends the light's path. This is a direct consequence of Einstein's general theory of relativity, which predicts that mass and energy can curve spacetime. The amount of bending is proportional to the object's mass M and inversely proportional to the distance of closest approach b (i.e., the impact parameter).

- **Eddington's 1919 Experiment**: The first observational confirmation of gravitational lensing came from Arthur Eddington's famous 1919 solar eclipse experiment. During a solar eclipse, starlight passing near the Sun was observed to bend, confirming that gravity could affect light's trajectory. This provided one of the earliest confirmations of Einstein's general theory of relativity. **[9]**

- **Wormhole Lensing**: A wormhole, if it existed, would create a significant curvature in spacetime. As with other massive objects, light passing near the wormhole would experience a bending of its path, causing an apparent shift in the positions of celestial objects, much like gravitational lensing observed around black holes and stars.

Wormhole's Gravitational Lensing Effects:

If a wormhole were located on Earth or nearby, it could create a localized **gravity well** capable of producing significant gravitational lensing effects. These effects would cause light from distant celestial objects (like stars or galaxies) to bend as it passed near the wormhole, altering the apparent positions of those objects. This could make the sky look quite different, depending on the location and mass of the wormhole.

Such an effect would be similar to, but likely more pronounced than, the lensing effects caused by black holes or other massive objects, especially if the wormhole's mass and curvature were extreme.

This phenomenon was first confirmed in Eddington's 1919 solar eclipse experiment, where starlight appeared displaced due to the Sun's gravitational field [9]. A wormhole on Earth would cause similar gravitational lensing effects, significantly altering the apparent position of celestial objects.

SOLAR POSITION SHIFT DUE TO WORMHOLE LENSING (REF. FIGURE 2)

For a vertically oriented wormhole facing south, light bending would vary based on observer location:

- **External Observer (Position A)**:
    - **At sunrise (light from the east)**: The Sun appears shifted southward (away from the observer) and toward the west (right) to the observer **[21]**.
    - **At sunset (light from the west)**: The Sun appears shifted southward (away from the observer) and toward the east (left) to the observer.
- **Internal Observer (Position B)**:

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- The Sun's apparent position differs significantly from its actual astronomical position, even at noon, due to lensing effects **[22].**

Gravitational lensing creates an optical illusion where the Sun's observed position is displaced from its actual location, affecting celestial navigation and perception of time for an observer inside or near the wormhole.

TIME DISTORTION AND SPACE-TIME CURVATURE MODEL

Extreme time dilation in a strong gravitational field results from space-time curvature, as predicted by General Relativity **[1]**. The time dilation effect follows the equation:

$$t' = t\sqrt{1 - \frac{2GM}{rc^2}}$$

Where:

- t' is the time experienced inside the wormhole (or near a massive object, like a black hole),
- t is the time observed externally (far from the gravitational source),
- r is the radial distance from the center of the gravitational field (the mass creating the field),
- G is the gravitational constant,
- M is the mass of the object creating the gravitational field (such as the central mass of a black hole or wormhole),
- c is the speed of light.

Explanation:

- **Time Dilation:** The term $\sqrt{1 - \frac{2GM}{rc^2}}$ represents the factor by which time is dilated near a massive object. The closer you are to the source of the gravitational field (smaller r), the stronger the time dilation effect. At $r = \frac{2GM}{c^2}$ (the Schwarzschild radius, often referred to as the event horizon), this factor becomes zero, meaning time stops for an external observer.
- **Wormhole Context:** For a wormhole, if the time dilation is significant near the entrance or the throat of the wormhole, time for someone inside the wormhole will pass differently compared to an observer at a distance from the wormhole.

This formula is analogous to the gravitational time dilation seen near black holes, especially in the context of Schwarzschild geometry, and would apply in wormhole scenarios where intense gravitational fields or spacetime curvature cause noticeable differences in the passage of time.

If time moves slower inside, an external observer sees the internal observer in slow motion [23]. If time moves faster inside, the internal observer perceives the outside world in fast-forward motion.

This phenomenon has been experimentally verified through atomic clock measurements on Earth, orbital satellites, and GPS system corrections, which account for relativistic time discrepancies.

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SPACE-TIME CURVATURE MODEL FOR EXTREME TIME DILATION (QURAN 18:19, 25)

Below are points related to following question.

- **What kind of place makes a "day or part of a day" inside equivalent to "300 years" outside (Surah Al-Kahf, 18:25) [9]? (Quran 18:19,18:25)**

To explain this scenario we will consider **1,000 years outside correspond to only 1 day inside**. We using this time ratio as it's the only relative time mentioned in Quran with reference to Human and Allah (GOD).

Quran 22:47 And indeed, a day with your Lord is like a thousand years of those which you count.

— Saheeh International Surah Al-Hajj - 1-78 - Quran.com

a) **Time Conversion – How Long is 300 Years Outside?**

If 1,000 years outside = 1 day inside, then:

$$\frac{1000 \text{ years}}{1 \text{ day}} = \frac{300 \text{ years}}{\text{x days}}$$

Solving for x:

$$\text{x} = \frac{300}{1000} = 0.3 \text{ days} = 7.2 \text{ hours}$$

This means that if someone spends 7.2 hours inside the wormhole, 300 years would pass outside.

b) **The Time Dilation Effect in a Wormhole/Gravitational Well (Quran 18:*19,25*)**

If an observer enters the wormhole, they experience time much slower relative to an external observer. The key effects include:

- **For the external observer**: The person inside the wormhole moves in extreme slow motion **[23].**
- **For the internal observer**: The outside world appears to speed up significantly.

Specific examples:

- **If 1,000 years will pass outside, the person inside will experience only a Day.**
- **If 300 years pass externally, only about 7.2 hours elapse inside.**

This extreme time dilation suggests profound implications for time travel or interstellar exploration, allowing travelers to age significantly less than those outside the wormhole.

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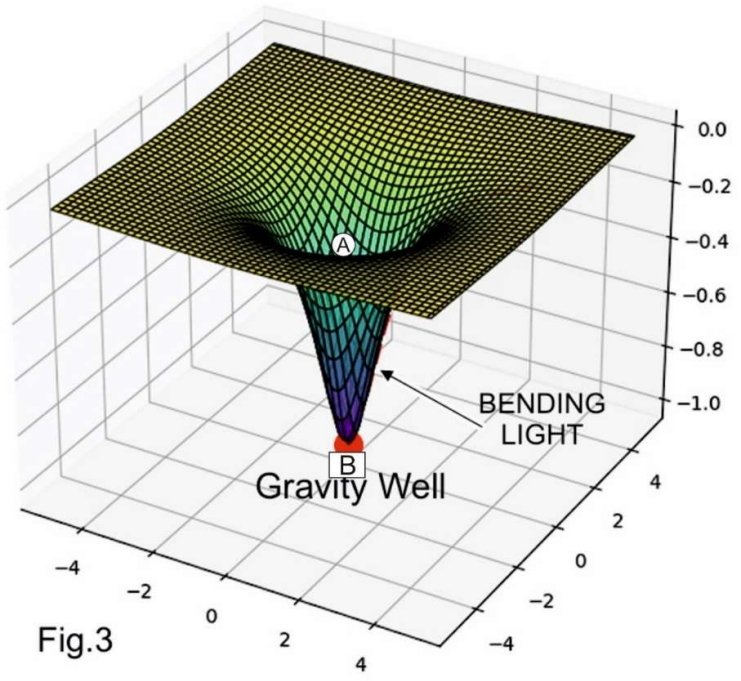

Figure 3. SHOWS BENDING OR LIGHT (RED) INSIDE GRAVITY WELL (SPACE TIME CURVATURE) / TIME DILATION.

OBSERVER PERCEPTION: INTERNAL VS EXTERNAL OBSERVERS (QURAN 18:18)

Now we will discuss points about following question in accordance with Gravity well.

- **Why sleeping people can make you flew away from them, and can fill you with horror/terror? But normally sleeping people are harmless. (Quran 18:18)**

Time Perception Distortion

As we know one of the most profound effect of gravity well/pit is **time dilation**, where time moves at different rates for the **internal** and **external** observers.

External Observer (A) Perspective:

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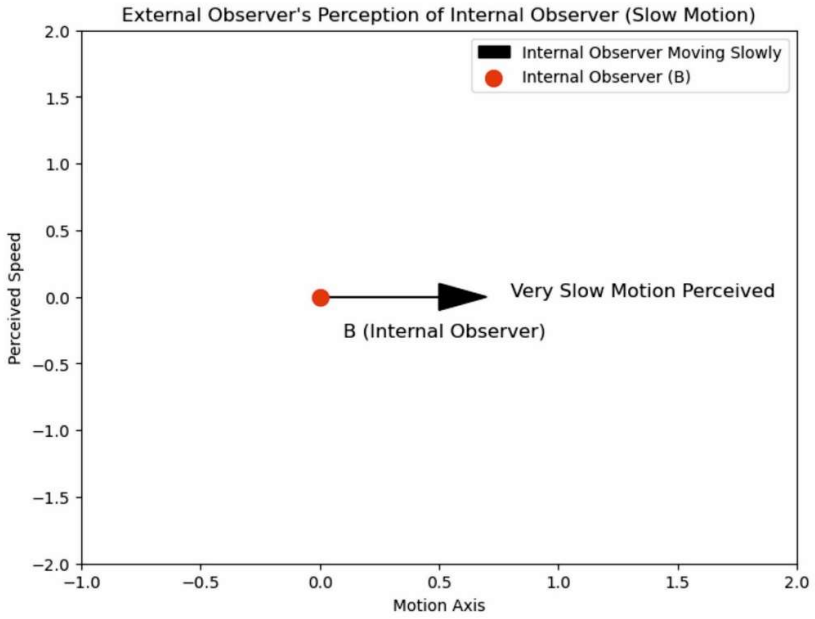

Figure 4. SHOWS VERY SLOW MOVEMENT OF OBSERVER (B) WHEN OBSERVED FROM OUTSIDE [23].

- The **internal observer appears to be moving in extreme slow motion** due to the slowed time rate inside the wormhole.
- If an external observer watches someone **blinking** inside the wormhole, it may take several minutes or even hours to complete a blink.
- If a person inside the wormhole **raises their hand**, the motion would appear almost frozen in time.
- **Any movements from inside the wormhole seem unnaturally delayed**, as if they are caught in slow motion, reinforcing the feeling of **watching a scene from another dimension**.
- Due to **gravitational lensing**, light from the internal observer may be distorted before reaching the external world.
- The **image of the internal observer may appear blurry, stretched, or oddly elongated**.
- If an internal observer is **sleeping**, their tiny unconscious movements may be slowed to such an extent that they appear **both asleep and awake simultaneously**.
- If an **animal (such as a dog) is inside**, any **stretching motion (e.g., extending its legs) would remain frozen for an unnaturally long period**, creating a disturbing sight.
- The **internal observer may appear to hover or move in an unnatural floating manner**, further enhancing the **eerie** illusion.
- If an external observer looks into the wormhole, the bending of light can create **duplicate images of the internal observer**, making it seem like they are present in multiple locations at once.
- If an internal observer spends what feels like a single day inside, they may exit to discover that centuries have passed outside.

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These all above points explains what verse Quran 18:18 referring to, and can fill external observer with horror/terror

SOUND PERCEPTION AND DISTORTION (QURAN 18:11)

Below are points related to following question.
Why need to cover ears of sleeping people? (Quran 18:11)

Since sound waves travel via **molecular vibrations**, their propagation is also affected by time dilation. This creates **drastic sound distortions** for both observers.

How the Internal Observer Hears the External Observer's Voice:

- Because time is moving **faster outside**, logically external sound waves will be **compressed** when entering the wormhole.
- Voices from outside **appear high-pitched and accelerated**, making them difficult to understand.
- A normal **1-minute conversation outside** might sound like **a few seconds (for example) of high-speed, chipmunk-like noise** inside the wormhole.
- **Background noises** from nature, wind, or traffic would be perceived as **rapid, continuous bursts of chaotic sound**.
- If a person inside attempts to sleep, the **external sound compression might make it unbearable**, as even faint sounds would be **amplified and accelerated** into an overwhelming auditory experience.
- **The internal observer may "need to cover their ears" due to the excessive auditory stimulation, otherwise it will be impossible for them to sleep.**

How the External Observer may Hear the Internal Observer's Voice:

- Because time is moving **slower inside the wormhole**, internal sound waves are **stretched and delayed** when leaving the wormhole.
- The voice of an internal observer **appears deep, slow, and ghostly** when heard by the external observer.
- A **single word spoken inside** could take **several minutes (for example)** to reach the external world.
- If an internal observer **shouts**, it may sound like **a prolonged, eerie wail** outside, similar to a slowed-down recording of a human voice.
- This distortion in sound could be perceived as unnatural or **otherworldly**, making communication between the two extremely difficult without advanced frequency correction mechanisms.

APPARENT SOLAR POSITION SHIFT AND ITS IMPACT ON PERCEPTION (QURAN 18:17)

Below are points related to following question.
Where does light bend, altering the apparent position of objects? (Quran 18:17)

Gravitational lensing **shifts the apparent position of the Sun**, causing **solar displacement effects** visible to both observers (Wormhole/Gravity well opening facing South).

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For the External Observer (A):

- **At sunrise**: The Sun, which is **physically in the east**, appears **shifted southward (away from observer)** and **towards the west (right)**.
- **At sunset**: The Sun, which is **physically in the west**, appears **shifted southward (away from observer)** and **towards the east (left)**.

For the Internal Observer (B):

- The Sun and celestial objects appear **to shift unpredictably**, making time perception difficult.
- The **Sun may never appear to set normally** as light bends around the wormhole, making it seem as if **dusk or dawn lingers for an abnormally long time**.
- Due to **light bending**, the **Sun might appear duplicated or stretched into arcs**, creating a surreal visual illusion.

2.4. KEY CONCLUSIONS FROM KAHF'S SPACE-TIME PROPERTIES

- **AL-KAHF IS NOT JUST A PHYSICAL CAVE—IT IS A GRAVITY WELL OR A WORMHOLE WHERE EXTREME TIME DILATION OCCURS.**
- **SURAH AL-KAHF 18:17 EXPLICITLY DESCRIBES THE BENDING OF LIGHT, PROVING SPACE-TIME CURVATURE.**
- **THE SLEEPERS EXPERIENCED TIME DILATION, DEMONSTRATING EINSTEIN'S RELATIVITY IN A QURANIC NARRATIVE.**
- **UNDERSTANDING KAHF IS THE KEY TO UNLOCKING THE DEEPER MEANING OF SURAH AL-KAHF AND ITS SPACE-TIME CONNECTIONS.**

3. THE JUNCTION OF TWO SEAS (BAHR) AS A WORMHOLE

3.1. INTRODUCTION: WHAT DOES "JUNCTION OF TWO SEAS" MEAN?

Surah Al-Kahf describes a fascinating event where Prophet Musa (A.S.) and his servant reach a mysterious location called the "Junction of Two Seas" (Majma' al-Bahrayn). Many traditional interpretations assume this refers to a physical meeting point of two water bodies. However, a deeper analysis of the Quranic text, with understanding of "Al-Kahf" and modern scientific insights suggests something far more profound:

◇ The phrase "Majma' al-Bahrayn" (Junction of Two Seas) logically signifies a wormhole or a space-time bridge connecting two separate realms.

◇ The description of (the dead/cooked/food) fish "slipping away" into the sea and coming back to life suggests a time-reversal event, aligning with physics of wormholes.

◇ The movement through this location exhibits characteristics of gravitational anomalies and Einstein-Rosen bridges.

Spacetime, as described in **Einstein's General Theory of Relativity**, is a four-dimensional continuum in which all celestial bodies move (Einstein, 1915). The Quranic descriptions of the **Sun and Moon floating in orbits (Quran 36:40, 21:33)**, the **junction of two seas (Quran 18:60)**, and the **Sun setting in murky water (Quran 18:86) (Mohd Mudassir (2025**)) provide intriguing parallels to modern cosmological theories. Here we will examine these verses from a scientific perspective, understanding them within the framework of astrophysics.

To understand it better we will look deeply into Quranic verses related to it.

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3.1.1. FLOATING IN AN ORBIT: SPACETIME AS A MEDIUM

Quranic Reference 1:

Surah Yasin (36:40):

لَا ٱلشَّمْسُ يَنۢبَغِى لَهَآ أَن تُدْرِكَ ٱلْقَمَرَ وَلَا ٱلَّيْلُ سَابِقُ ٱلنَّهَارِ
وَكُلٌّ فِى فَلَكٍ يَسْبَحُونَ

"It is not for the Sun to overtake the Moon, nor does the night outstrip the day, but **each is in an orbit floating (Yasbahoon)**."

Surah Al-Anbiya (21:33):

وَهُوَ ٱلَّذِى خَلَقَ ٱلَّيْلَ وَٱلنَّهَارَ وَٱلشَّمْسَ وَٱلْقَمَرَ
كُلٌّ فِى فَلَكٍ يَسْبَحُونَ

"And He is the One who created the night and the day, and the Sun and the Moon, **each floating in an orbit.**"

In these Quranic verses **21:33,36:40 "Kullun Fi Falak"** translates to "Each [celestial body] is swimming in its orbit." The sequence of letters in the Arabic phrase—**كُلٌّفِيفَلَكٍ (k-l-f-y-f-l-k)**—offers profound insights into the circular motion of celestial bodies:

- The arrangement of letters mirrors the structure of orbits, with **yā (ي)** at the center, symbolizing a central point or axis, and other letters like **kāf (ك)** and **lām (ل)** revolving around it.
- The circular arrangement reflects the perpetual motion of celestial bodies described in the verse.

This linguistic artistry highlights the Quran's precision in describing celestial mechanics, where the letters themselves align with the motions of objects in the universe.

Figure 5.

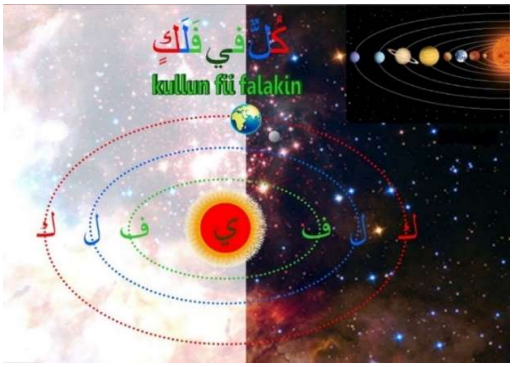

Figure 6.

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Scientific Interpretation.

- The use of the term "**floating**" **(Yasbahoon)** suggests movement through a **medium**.
- In modern physics, celestial bodies do not float in a **fluidic** medium, but rather in **spacetime**, which is affected by gravity (Hawking, 1988).
- This implies that spacetime behaves similarly to a medium, allowing celestial bodies to move within it, much like objects floating in a sea.
- The Quran's use of "floating" metaphorically aligns with our understanding that planets and stars move within the **fabric of spacetime** (Thorne, 1994).**[2]**

3.1.2. THE JUNCTION OF TWO SEAS: A WORMHOLE?

Quranic Reference 2:
وَإِذْ قَالَ مُوسَىٰ لِفَتَىٰهُ لَآ أَبْرَحُ حَتَّىٰٓ أَبْلُغَ مَجْمَعَ ٱلْبَحْرَيْنِ أَوْ أَمْضِىَ حُقُبًا

"And [mention] when Moses said to his servant, 'I will not give up until I reach the junction of the two seas or continue for a long period.'" (Quran 18:60 Sahih International)

3.1.3. LINGUISTIC BREAKDOWN OF BAHR (SEA)

مَجْمَعَ ٱلْبَحْرَيْنِ (Majma' al-Bahrayn) – "The Meeting of Two Seas"

- The **word "Bahr" (بَحْر)** in classical Arabic **does not strictly mean water**; it also refers to **vastness and immensity**.
- The Quran uses **"Bahr" in different contexts**, sometimes metaphorically referring to vast expanses, **which could include cosmic dimensions or space-time realms.**
- **Islamic scholars such as Fakhr al-Din al-Razi and Ibn Kathir** mention that **"Bahr" can represent domains beyond the physical world.**

Scientific Interpretation

- If we consider "Bahr" as referring to **two space-time domains**, the **Junction of Two Seas** refers to **a wormhole connecting two separate regions in the universe.**
- A wormhole in physics is a theoretical **shortcut through spacetime**, allowing passage between distant points instantaneously (Einstein & Rosen, 1935).
- The story of Moses meeting **Khidr** at this location suggests a significant event involving **time and knowledge**
- We will see further, At this junction, a **fish comes back to life**, which logically suggest a distortion of time, similar to effects near a **wormhole** (Morris & Thorne, 1988).[4]
- As this verse describes two different spacetime regions meeting, it aligns with the idea of a **wormhole**.

Note: Seas "bahr (Arabic)" Originally, Bahr was a broad term for vast, deep waters (including oceans, seas, and even great rivers), as well as a metaphor for depth, knowledge, and limitlessness. Over time, translations narrowed it down to just "sea," reducing its broader implications. ('al-bahr' in the Holy Quran and Translation Variations: A Study upon Three Translations of the Holy Quran)[18]

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3.1.4. THE SUN SETTING IN MURKY WATER: A BLACK HOLE?

Quranic Reference 3:

حَتَّىٰٓ إِذَا بَلَغَ مَغۡرِبَ ٱلشَّمۡسِ وَجَدَهَا تَغۡرُبُ فِي **عَيۡنٖ حَمِئَةٖ** وَوَجَدَ عِندَهَا قَوۡمٗاۗ قُلۡنَا يَٰذَا ٱلۡقَرۡنَيۡنِ إِمَّآ أَن تُعَذِّبَ وَإِمَّآ أَن تَتَّخِذَ فِيهِمۡ حُسۡنٗا

Surah Al-Kahf (18:86): "Until, when he reached the setting of the Sun, he found it [as if] setting in a spring of dark, murky water, and he found near it a people."

Scientific Interpretation

- **The "spring of dark, murky water" is Black Hole/Wormhole (A spring of singularity), human body was created from singularity, all stars were created from singularity. Sun was setting in singularity. (Mohd Mudassir, 2025)[6]**
- **In modern astrophysics, a black hole is a region where light cannot escape, making it appear dark (Hawking, 1974).**
- **This suggests that Dhul-Qarnayn's journey led him to a region resembling a black hole's event horizon/singularity, where light and matter appear to disappear.(Mohd Mudassir, 2025)[6].**

3.1.5. CONNECTING THE THREE VERSES: A UNIFIED CONCEPT OF SPACETIME

By analyzing these three Quranic verses together with the understanding of Al-Kahf, we found a coherent **scientific pattern**:

- **Floating in an orbit** → Suggests spacetime as a medium (Einstein, 1915).
- **Junction of two seas** → Logically indicates a wormhole connecting two points in spacetime (Morris & Thorne, 1988).
- **Setting in murky water** → describes a black hole/Singularity/event horizon, where matter disappears into a singularity (Hawking, 1974).

Each of these verses uses water-related metaphors, reinforcing the idea that spacetime itself behaves like a fluidic continuum (Penrose, 2004).

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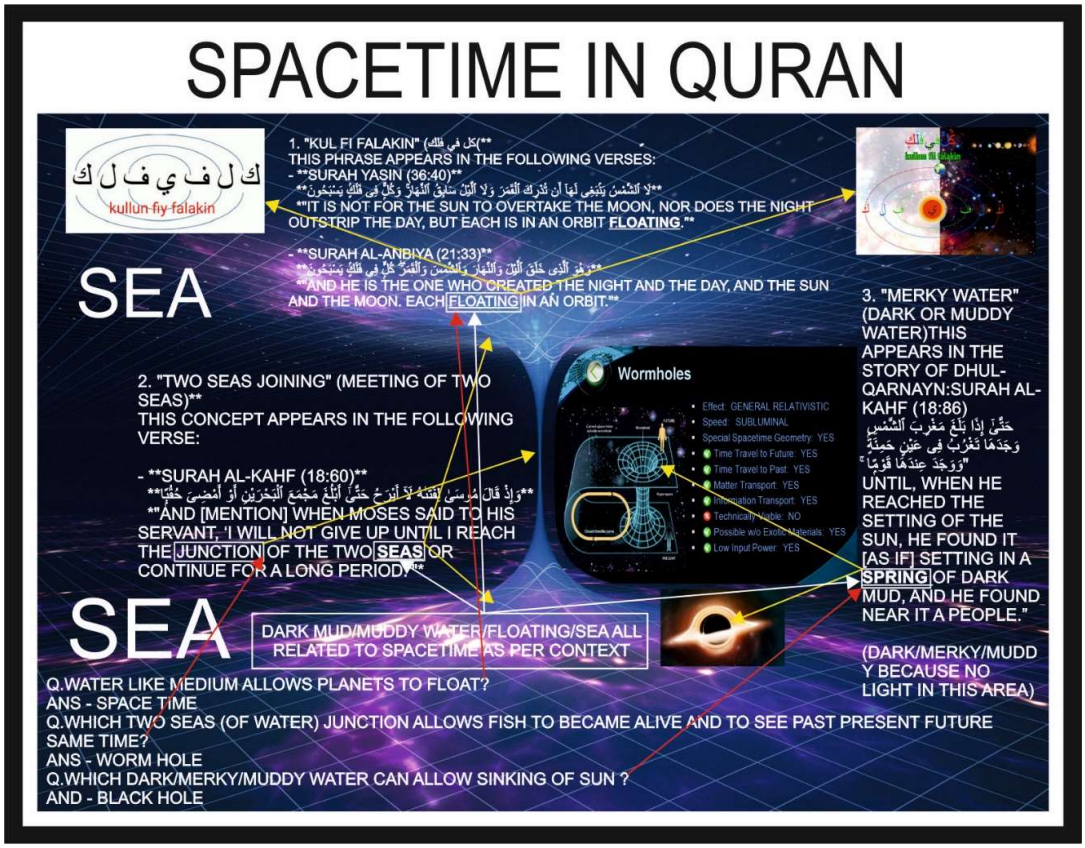

Figure 7. SHOWS HOW "SEA", "FLOATING", "SPRING", "JUNCTION", "WORMHOLE" ETC. ARE CONNECTED TOGETHER.

Quranic descriptions of celestial events appear to align with modern astrophysical concepts and suggests a deep understanding of the **nature of spacetime** long before modern physics. The understanding that these verses reference **black holes, wormholes, and the movement of celestial bodies within spacetime** opens a fascinating dialogue between science and scripture.

THIS SECTION EXPLORED:

- THE **LINGUISTIC MEANING OF BAHR** AND WHY IT MAY REFER TO **VASTNESS, NOT JUST WATER.**
- **THE QURANIC VERSES DESCRIBING THIS EVENT** AND THEIR **SCIENTIFIC IMPLICATIONS**.
- **HOW WORMHOLES ALLOW FOR TIME REVERSAL, SPACE-TIME WARPING, AND INTERDIMENSIONAL TRAVEL.**

3.2. SURAH AL-KAHF 18:61 – THE FISH SLIPS INTO THE "SEA" (WORMHOLE OPENING?)

فَلَمَّا بَلَغَا مَجْمَعَ بَيْنِهِمَا نَسِيَا حُوتَهُمَا فَٱتَّخَذَ سَبِيلَهُۥ فِى ٱلْبَحْرِ سَرَبًا

"But when they reached the junction between them, they forgot their fish, and it took its course into the sea, slipping away." (Sahih International)

The Quran describes "a Fish "slipping away" mysteriously at the Junction of Two Seas", only for it to reappear alive later. This matches scientific theories of time reversal within a wormhole (Morris & Thorne, 1988)[4].

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3.2.1. SCIENTIFIC EXPLANATION: THE FISH AS A TEST PARTICLE IN A WORMHOLE

Fish was used as a test particle to find out junction of two seas, it also implies that junction of two seas was not directly visible with normal eyes, a dead fish was needed to indicate "junction" location, all these clues showing properties of wormhole and points towards it undoubtedly.

3.3. SURAH AL-KAHF 18:63 – THE FISH COMES BACK TO LIFE (TIME REVERSAL?)

قَالَ أَرَءَيْتَ إِذْ أَوَيْنَآ إِلَى ٱلصَّخْرَةِ فَإِنِّى نَسِيتُ ٱلْحُوتَ وَمَآ أَنسَىٰنِيهُ إِلَّا ٱلشَّيْطَٰنُ أَنْ أَذْكُرَهُۥ وَٱتَّخَذَ سَبِيلَهُۥ فِى ٱلْبَحْرِ عَجَبًا

"He said, 'Did you see when we rested at the rock? Indeed, I forgot [there] the fish. And none made me forget it except Satan—that I should mention it. And it took its course into the sea amazingly.'" (Sahih International)

3.3.1. SURAH AL-KAHF 18:63 – THE FISH COMES BACK TO LIFE (TIME REVERSAL?)

- The fish, **which was dead**, suddenly **comes back to life**.
- The phrase "**عَجَبًا" (ajaban) - "amazingly**" implies that **this was not a normal event but something extraordinary and supernatural.**
- In **wormhole physics**, if an object **travels through a closed time-like curve**, it can **emerge at an earlier point in time**—essentially experiencing **time reversal**.
- This aligns with the **Quranic description of the fish "disappearing" into the sea and later appearing alive.**
- Einstein-Rosen Bridge Model supports the idea that **the fish entered a wormhole and traveled to another space-time location, explaining its disappearance and reappearance (Surah Al-Kahf, 18:61)【10】.**

3.4. SCIENTIFIC EQUATIONS OF A WORMHOLE

Wormhole Metric - Einstein's Wormhole Equation (Einstein-Rosen Bridge):

$$ds^2 = -c^2 d\tau^2 + dl^2 + r^2(d\theta^2 + \sin^2\theta d\phi^2)$$

Where:

- ds^2 is the **spacetime interval** or the distance between two infinitesimally close events in spacetime.
- c is the **speed of light**.
- $d\tau$ is the differential **proper time**, the time experienced by an observer moving along the trajectory (like in the case of a moving object or particle).
- dl^2 is the **spatial interval** between two events (this would be the distance in a certain reference frame).
- r, θ, and ϕ are the spherical coordinate system variables:
  - r is the radial distance,
  - θ is the polar angle,
  - ϕ is the azimuthal angle (longitude).

Explanation:

1. **The Time Component $-c^2 d\tau^2$:**
   - This term corresponds to the **time part** of the spacetime interval, where $d\tau$ represents the proper time experienced by an observer (this is the time measured

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by a clock moving along with the observer). The negative sign is a typical feature in general relativity, signifying the **timelike** nature of this term, where time behaves differently from spatial intervals (as in the signature of the Minkowski spacetime metric).

2. **The Spatial Interval dl^2:**
   - This term represents the spatial distance between events. The expression for dl^2 depends on the coordinate system you are using. In this case, it could be a generalized term representing a spatial distance that might be more complex than just the radial term alone.

3. **The Angular Component $r^2(d\theta^2 + \sin^2\theta\, d\phi^2)$:**
   - This is the usual **spherical geometry** part of the metric. It describes the **angular separation** between two events on a 2-dimensional surface. Specifically:
     - $d\theta^2$ represents the angular separation in the polar direction (latitude),
     - $\sin^2\theta\, d\phi^2$ corresponds to the azimuthal angular separation in the east-west direction (longitude), multiplied by r^2 because the distance between two angular points grows as r increases.

Geometric Interpretation:

This equation represents the **spacetime geometry** in **curved space** with spherical symmetry. The time term relates to how **time** is experienced differently depending on the observer's position or velocity, and the spatial terms describe the **geometry** of the space.

- For a **static observer** (i.e., not moving), the equation describes the relationship between the proper time $d\tau$ and the spatial intervals in the spherical coordinates.
- The equation implies a spherical symmetry, meaning the curvature of the space or spacetime is the same in all directions, which is common for gravitational fields such as those near stars, planets, or black holes.

Implications of This Model:

- The **Junction of Two Seas (Majma' al-Bahrayn) could be a real wormhole entrance.**
- The fish **entering the wormhole and emerging alive suggests a time-reversal event**.
- If Musa (A.S.) and his servant were near **a wormhole throat**, they could have **witnessed a space-time distortion firsthand.**

3.5 KEY CONCLUSIONS FROM THE JUNCTION OF TWO SEAS

- THE **WORD "BAHR" (SEA) IN CLASSICAL ARABIC MEANS "VASTNESS," NOT JUST WATER—ALLOWING FOR AN INTERPRETATION OF TWO SPACE-TIME REGIONS MEETING.**
- **SURAH AL-KAHF 18:61 SUGGESTS A WORMHOLE OPENING, AS THE FISH "SLIPS AWAY" MYSTERIOUSLY.**
- **SURAH AL-KAHF 18:63 DESCRIBES THE FISH RETURNING TO LIFE, SUGGESTING A TIME-REVERSAL EFFECT CONSISTENT WITH WORMHOLE PHYSICS.**
- **THE QURAN DESCRIBES A REAL PHYSICAL PHENOMENON CENTURIES BEFORE MODERN SCIENCE PROPOSED WORMHOLES.**

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4. DHUL-QARNAYN'S JOURNEY & BLACK HOLE PHYSICS

4.1 INTRODUCTION: A JOURNEY BEYOND EARTHLY BOUNDARIES

Surah Al-Kahf narrates the extraordinary journey of **Dhul-Qarnayn**, a figure granted **divine authority and advanced knowledge**. His travels take him to two remarkable locations:

- **The Setting Place of the Sun (18:86)** – Where the sun appears to **set in a spring of dark, murky water**.
- **The Rising Place of the Sun (18:90)** – Where the sun rises on a people with **no barrier protecting them from its heat**.

For centuries, these descriptions have been **interpreted literally**, but now better understanding of "Al-Kahf" itself and modern astrophysics offers a compelling new perspective:

- The **Setting Place of the Sun** logically corresponds to **a black hole event horizon/singularity**, where light and matter vanish into darkness.
- The **Rising Place of the Sun** aligns with **a wormhole exit or white hole**, where extreme radiation is present.

This section **analyzes these locations using principles of general relativity, black hole physics, and space-time anomalies**.

Dhul-Qarnayn's journey describes **two extreme cosmic locations**—one where the sun **disappears into darkness** and another where it **rises unfiltered by any atmospheric protection**. This correlates with the physics of:
Black holes and their event horizons (Surah Al-Kahf, 18:86)**[11].**
Wormhole exits or white holes where space-time distortions lead to extreme conditions (Surah Al-Kahf, 18:90)**[12].**

4.2. THE SETTING PLACE OF THE SUN – A BLACK HOLE EVENT HORIZON (18:86)

> **حَتَّىٰٓ إِذَا بَلَغَ مَغۡرِبَ ٱلشَّمۡسِ وَجَدَهَا تَغۡرُبُ فِي عَيۡنٍ حَمِئَةٖ وَوَجَدَ عِندَهَا قَوۡمٗا**
> **"Until, when he reached the setting place of the sun, he found it [as if] setting in a spring of dark, murky water, and he found near it a people…"** (Sahih International, 18:86) **[11].**

This description aligns with the visual appearance of a black hole, where light and matter are trapped within an accretion disk (Penrose, 1965)[5]. The term "spring of dark, murky water" as discussed before is Singularity/Blackhole.

4.2.1. LINGUISTIC AND SCIENTIFIC BREAKDOWN

وَجَدَهَا تَغۡرُبُ (Wajadahā taghrubu) – "He found it setting"

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- This may mean two conditions -

a) Sun was physically **sinking into spring of dark, murky water /singularity** (Sun was actually going into wormhole/blackhole).

b) It may also describe **how it appeared from Dhul-Qarnayn's viewpoint**, as **Gravitational lensing** can also cause a celestial body to appear **distorted or shifted** near a black hole.

فِي عَيْنٍ حَمِئَةٍ (Fī 'Aynin Ḥami'atin) – "Into a spring of dark, murky water"(Black Hole/singularity)[6]

- **Ayn (عَيْن)** means **a well, source, or vortex,eye**—not necessarily water.
- **Ḥami'ah (حَمِئَةٍ)** means **darkness or muddy appearance**, which **matches Singularity/Blackhole**.**[6]**

4.2.2. SCIENTIFIC EXPLANATION: WHAT HAPPENS AT A BLACK HOLE'S EVENT HORIZON?

A **Blackhole event horizon** is the boundary where **nothing—not even light—can escape.** A **swirling accretion disk of gas and dust** surrounds the blackhole and may be appearing **dark and murky** due to intense gravitational warping.
Objects near a black hole experience **extreme time dilation**, appearing **frozen** from an external observer's view.

Schwarzschild Radius Equation (Event Horizon Boundary):

$$R_s = \frac{2GM}{c^2}$$

This is the formula for the **Schwarzschild radius** R_s, which is the radius of the event horizon of a non-rotating, spherically symmetric black hole. Let's break it down:

Explanation:

- R_s: The **Schwarzschild radius**, often referred to as the "event horizon" of a black hole. It represents the distance from the center of a black hole to the point at which the escape velocity equals the speed of light. Inside this radius, not even light can escape, hence the term "black hole."

- G: The **gravitational constant**, a fundamental physical constant used to describe the strength of gravitational attraction between objects. Its value is approximately $G \approx 6.674 \times 10^{-11}\ m^3\ kg^{-1}\ s^{-2}$.

- M: The **mass** of the object creating the gravitational field (in this case, a black hole).

- c: The **speed of light** in a vacuum, which is approximately $c \approx 3 \times 10^8$ m/s

This equation tells us that the Schwarzschild radius is directly proportional to the mass of the object. For a given mass M, the Schwarzschild radius R_s defines the size of the black hole's event horizon.

Significance:

- **Event Horizon**: The event horizon is the boundary around a black hole beyond which nothing, not even light, can escape the gravitational pull. The Schwarzschild radius gives the radius of this boundary.

- **Black Hole Formation**: When a massive object collapses to a small enough volume (inside the Schwarzschild radius), it becomes a black hole. For example, for a mass $M =$

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1 solar mass (approximately 1.989×10^{30} kg), the Schwarzschild radius is around 3 kilometers.

This formula is crucial in understanding the properties of black holes, especially in the context of general relativity.

Implication:

- **If Dhul-Qarnayn reached a location where the sun appeared to be sinking into darkness,** it strongly resembles the description of a **black hole event horizon.**

4.3. THE RISING PLACE OF THE SUN – A WORMHOLE EXIT OR WHITE HOLE (18:90)

حَتَّىٰ إِذَا بَلَغَ مَطْلِعَ ٱلشَّمْسِ وَجَدَهَا تَطْلُعُ عَلَىٰ قَوْمٍ لَّمْ نَجْعَل لَّهُم مِّن دُونِهَا سِتْرًا

"Until, when he came to the rising place of the sun, he found it rising on a people for whom We had not made against it any shield." (Sahih International, 18:90)**[10]**

This verse describes a **location where the sun appears unshielded**. This could logically imply:
A wormhole exit, where the gravitational shielding is removed upon exit.
A white hole, a theoretical entity where matter and light are expelled, opposite to a black hole (Hawking, 1974)[3].

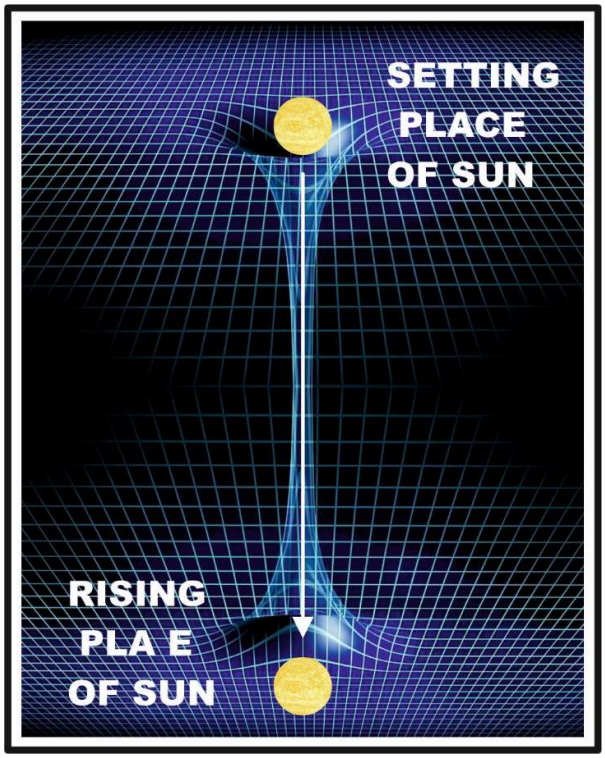

Figure 8. SHOWS SETTING PLACE OF SUN AND RISING PLACE OF SUN AFTER UNDERSTANDING OF QURAN 18:17.

4.3.1. SCIENTIFIC EXPLANATION: COULD THIS BE A WHITE HOLE OR WORMHOLE EXIT?

وَجَدَهَا تَطْلُعُ (Wajadahā tatluʿu) – "He found it rising"

- This implies **Dhul-Qarnayn's position had changed significantly**.

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- If he had entered a **wormhole**, this **could describe an exit point into another cosmic region**.
- Either he travelled in to past/future, parallel universe, different point in spacetime in same universe.
- Wormhole exit is required in all above cases.

لَّمْ نَجْعَل لَّهُم مِّن دُونِهَا سِتْرًا (Lam naj'al lahum min dūnihā sitrā) – "We had not made for them any shield"

- This could describe a **high-radiation environment where there is no natural protection from solar radiation.**
- **This aligns with a white hole or wormhole exit, where extreme light and radiation are emitted.**
- **Or maybe it was originating place of the star/Sun.**

4.3.2. SCIENTIFIC EXPLANATION: COULD THIS BE A WHITE HOLE OR WORMHOLE EXIT?

A white hole is a hypothetical region in space **where matter and light are expelled, opposite to a black hole.**
A wormhole (Einstein-Rosen Bridge) is a theoretical shortcut connecting two points in space-time.
If Dhul-Qarnayn **entered a black hole**, then the **Rising Place of the Sun** representS **the exit point into another region of space-time.**

Wormhole Metric (Einstein-Rosen Bridge Equation):

$$ds^2 = -c^2 d\tau^2 + dl^2 + r^2(d\theta^2 + \sin^2\theta d\phi^2)$$

Where:

- ds^2 is the **spacetime interval** or the distance between two infinitesimally close events in spacetime.
- c is the **speed of light**.
- $d\tau$ is the differential **proper time**, the time experienced by an observer moving along the trajectory (like in the case of a moving object or particle).
- dl^2 is the **spatial interval** between two events (this would be the distance in a certain reference frame).
- r, θ, and ϕ are the spherical coordinate system variables:
  - r is the radial distance,
  - θ is the polar angle,
  - ϕ is the azimuthal angle (longitude).

Explanation:

4. **The Time Component $-c^2 d\tau^2$:**
   - This term corresponds to the **time part** of the spacetime interval, where $d\tau$ represents the proper time experienced by an observer (this is the time measured by a clock moving along with the observer). The negative sign is a typical feature in general relativity, signifying the **timelike** nature of this term, where time behaves

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differently from spatial intervals (as in the signature of the Minkowski spacetime metric).

5. **The Spatial Interval dl^2:**
   - This term represents the spatial distance between events. The expression for dl^2 depends on the coordinate system you are using. In this case, it could be a generalized term representing a spatial distance that might be more complex than just the radial term alone.

6. **The Angular Component $r^2(d\theta^2 + \sin^2\theta\, d\phi^2)$:**
   - This is the usual **spherical geometry** part of the metric. It describes the **angular separation** between two events on a 2-dimensional surface. Specifically:
     - $d\theta^2$ represents the angular separation in the polar direction (latitude),
     - $\sin^2\theta\, d\phi^2$ corresponds to the azimuthal angular separation in the east-west direction (longitude), multiplied by r^2 because the distance between two angular points grows as r increases.

Geometric Interpretation:

This equation represents the **spacetime geometry** in **curved space** with spherical symmetry. The time term relates to how **time** is experienced differently depending on the observer's position or velocity, and the spatial terms describe the **geometry** of the space.

- For a **static observer** (i.e., not moving), the equation describes the relationship between the proper time $d\tau$ and the spatial intervals in the spherical coordinates.
- The equation implies a spherical symmetry, meaning the curvature of the space or spacetime is the same in all directions, which is common for gravitational fields such as those near stars, planets, or black holes.

Implication:

- The **Setting Place of the Sun** (18:86) describes a **black hole event horizon/singularity**.
- The **Rising Place of the Sun** (18:90) suggests **a wormhole exit or a white hole, emitting high radiation**.

4.4. KEY CONCLUSIONS FROM DHUL-QARNAYN'S JOURNEY

- THE "SPRING OF MURKY WATER" (18:86) RESEMBLES THE BLACKHOLE/SINGULARITY. [6]
- THE GRAVITATIONAL WARPING/LENSING AT A BLACK HOLE EVENT HORIZON MATCHES THE QURANIC DESCRIPTION OF THE SUN APPEARING TO SINK INTO DARKNESS.
- THE "RISING PLACE OF THE SUN" (18:90) SUGGESTS A HIGH-RADIATION REGION, POSSIBLY A WORMHOLE EXIT OR WHITE HOLE.
- MODERN PHYSICS PROPOSED BLACK HOLES IN 1916 AND WORMHOLES IN 1935, YET THE QURAN DESCRIBED THEIR EFFECTS 1,400 YEARS AGO.

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5. OTHER QURANIC VERSES DESCRIBING SPACE-TIME CURVATURE

While **Surah Al-Kahf** offers some of the most vivid illustrations of **wormholes, time dilation, and space-time distortions**, these concepts are by no means isolated to this chapter. The **Quran consistently references phenomena** such as **gravitational warping, celestial folding, cosmic gates**, and **temporal anomalies** throughout its verses — pointing to their role as **divinely embedded natural laws**.

These verses not only encourage **philosophical reflection** but also **invite scientific inquiry**, potentially offering insights into the **architecture of the cosmos**, the **fabric of time**, and **multi-dimensional reality**. The repeated references to **relativity of time**, **folding of the heavens**, and **angelic ascension through cosmic layers** suggest a deeper integration between **metaphysical knowledge** and **modern physics**.

Below is a list of Quranic verses that can **reorient our thinking**, ignite deeper exploration, and perhaps even **guide scientific advancement** as we continue to unravel the mysteries of the universe.

5.1. SURAH AL-FURQAN 25:11-14 – HELL AS A WORMHOLE

This Quranic description is in Surah Al-Furqan (25:11-14), where Hellfire perceives/sees humans from a distance, and humans hear Hell's fury from afar. We investigate the wormhole concept as a scientifically plausible explanation for this phenomenon. The analysis includes:

- How **light from humans reaches Hell** and how **sound from Hell reaches humans over vast distances**.
- The "**narrow place**" described in the Quran as the **wormhole throat**.
- The **repetitive cycle of punishment (death and became alive repeatedly)**, explained using **closed time-like curves and self-looping wormhole structures**.
- The **scientific feasibility of a wormhole allowing light and sound to pass without distortion**.

Description Diagram - *Surah Al-Furqan 25:11-14*

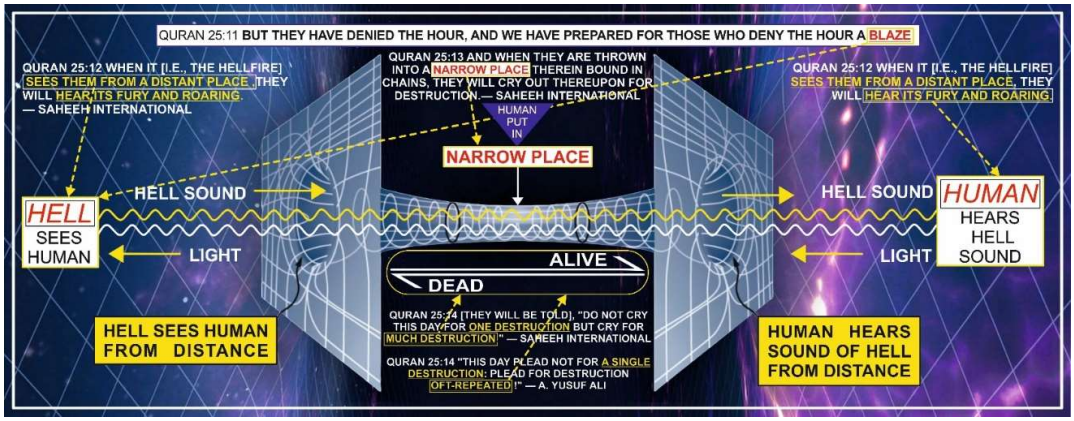

Figure 9.

Description:.

This Figure visually represents the Quranic description of **Hell and humans being connected through a wormhole**. The diagram illustrates:

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- **Light from humans traveling through the wormhole to Hell**, explaining how Hellfire can "see" humans from afar (**Einstein & Rosen, 1935**). [24]
- **Sound from Hell traveling back to humans**, demonstrating that specific types of **wormholes allow acoustic waves to pass through** (**Cummer et al., 2016**).[25]
- **The narrow place**, which corresponds to the **wormhole throat**, where individuals are thrown in, bound in chains, and subjected to **cyclic punishment through closed time-like curves (CTCs)** (**Hawking, 1992**). [26]

The Quran describes this event where Hellfire "sees" humans from a distance, and humans "hear" Hell's fury from afar. The verses from Surah Al-Furqan (25:11-14) state:

Arabic Text and Translation (Sahih International)

Verse 11:

وَكَذَّبُواْ بِٱلسَّاعَةِ وَأَعۡتَدۡنَا لِمَن كَذَّبَ بِٱلسَّاعَةِ سَعِيرًا

"But they have denied the Hour, and We have prepared for those who deny the Hour a Blaze." (Quran 25:11)

Verse 12:

إِذَا رَأَتۡهُم مِّن مَّكَانِۭ بَعِيدٖ سَمِعُواْ لَهَا تَغَيُّظٗا وَزَفِيرٗا

"When it [i.e., the Hellfire] sees them from a distant place, they will hear its fury and roaring." (Quran 25:12)

Verse 13:

وَإِذَآ أُلۡقُواْ مِنۡهَا مَكَانٗا ضَيِّقٗا مُّقَرَّنِينَ دَعَوۡاْ هُنَالِكَ ثُبُورٗا

"And when they are thrown into a narrow place therein bound in chains, they will cry out thereupon for destruction." (Quran 25:13)

Verse 14 (Sahih International):

لَّا تَدۡعُواْ ٱلۡيَوۡمَ ثُبُورٗا وَٰحِدٗا وَٱدۡعُواْ ثُبُورٗا كَثِيرٗا

"Do not cry this Day for one destruction but cry for much destruction." (Quran 25:14)

Verse 14 (Yusuf Ali):

"This Day plead not for a single destruction: plead for destruction oft-repeated!"

These verses raise key scientific questions (**Einstein & Rosen, 1935**; **Morris & Thorne, 1988**):[24][28]

1. **How can Hellfire "see" humans from far away?**
2. **How do humans "hear" the sound of Hellfire across vast distances?**
3. **What is the "narrow place" where they are thrown in?**
4. **Why is destruction a repetitive process?**

We analyze these **phenomena through the physics of wormholes** (**Hawking, 1992**).[26]

5.1.1. SCIENTIFIC EXPLANATION OF THE PHENOMENON

LIGHT AND SOUND TRAVELING THROUGH A WORMHOLE

The Quran states that Hellfire sees humans from a distance, implying that light from humans must travel to Hell. Additionally, it states that humans hear Hell's roaring from afar, meaning sound waves from Hell must reach humans.

A conventional space-time model **cannot** explain this because:

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- **Light travels in a straight line unless deflected by gravity or medium changes** (**Einstein & Rosen, 1935**). [24]
- **Sound waves require a medium, yet sound is heard across vast cosmic distances** (**Garcia-Meca et al., 2013**).[27]

This suggests that **Hellfire and humans are connected through a special space-time structure**, best explained by a **wormhole**.

5.1.1.3 WORMHOLES AS A CONNECTION BETWEEN HELL AND HUMANS

A wormhole is a theoretical space-time tunnel described by the **Einstein-Rosen Bridge equation** (**Einstein & Rosen, 1935**)[24]

$$ds^2 = -c^2dt^2 + \left(1 - \frac{b(r)}{r}\right)^{-1} dr^2 + r^2 d\Omega^2$$

where $b(r)$ is the wormhole function.

For this Quranic description to be **scientifically consistent**, the wormhole must have the following properties:

1. **It must allow light to pass from one end to the other** (**Cummer, Christensen, & Alù, 2016**).[25]
2. **It must allow sound to travel through it without distortion** (**Garcia-Meca et al., 2013**).[27]
3. **It must have a "narrow place" acting as the wormhole throat** (**Morris & Thorne, 1988**).[28]
4. **I must allow a dead person to become alive again and again after dying.** (**Morris & Thorne, 1988**).[28]

SOUND PROPAGATION THROUGH WORMHOLES

While traditional wormhole theories primarily address **electromagnetic waves (light)**, recent studies have explored the possibility of **acoustic (sound) waves traversing wormhole-like structures**. Research in **acoustic metamaterials** has shown that it is possible to construct **sound tunneling effects** that allow sound to travel **without significant distortion**, a phenomenon similar to the way **light passes through an Einstein-Rosen bridge** (**Garcia-Meca et al., 2013**; **Cummer, Christensen, & Alù, 2016**).[25][27].

SCIENTIFIC EXPLANATION OF SOUND IN WORMHOLES

a. **Acoustic Wormholes in Metamaterials:**

   - In modern physics, scientists have created **acoustic wormholes** using **engineered metamaterials**, which guide sound waves through a tunnel-like structure, similar to an electromagnetic wormhole (**Cummer et al., 2016**).[25]
   - The Quranic verse **(25:12)** states that humans will "hear its fury and roaring" from a **far-off place**, which implies a **mechanism allowing sound to propagate over vast distances** without **attenuation or dispersion**.
   - This is consistent with **modern research on sound tunneling**, where sound can pass through a medium without spreading out or losing energy (**Garcia-Meca et al., 2013**).[27]

b. **Hartman Effect and Sound Tunneling:**

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- The **Hartman effect**, initially proposed for **quantum tunneling**, suggests that certain waves can "**tunnel**" **through a barrier** almost instantaneously without distortion (**Hartman, 1962**).[29]
- Similar behavior has been observed in **classical wave mechanics**, including **acoustic wave transmission**, which could theoretically explain how **Hell's sound reaches humans without dissipation**.
- This means that if Hell and the humans are connected through **a space-time structure resembling a wormhole**, sound waves could travel through it **efficiently** without scattering.

HOW THIS SUPPORTS THE QURANIC DESCRIPTION

- The **scientific feasibility** of sound transmission across vast distances is **best explained through a wormhole structure**, where sound travels **without distortion**.
- The **Quran describes Hellfire's sound reaching humans from a distance**, which **aligns with the principles of wave tunneling in wormhole-like geometries**.

5.1.2. THE NARROW PLACE AS A WORMHOLE THROAT

Verse (25:13) states that the condemned are thrown into a "narrow place", which perfectly matches the description of a wormhole throat in general relativity (Morris & Thorne, 1988).[28]

Scientific Properties of a Wormhole Throat:

- The **throat** of a wormhole is the point where **space-time curvature is at its maximum**.
- This is the **most extreme gravitational region**, where movement is **restricted** and **time dilation is significant**.
- Objects **cannot move freely** once they reach the wormhole throat—they are **forced through the structure**.

How This Explains the Quranic Description:

- **Verse 25:13 describes the condemned being "thrown" into a narrow place**, indicating a **constricted region of space-time**, just as **an object will pass through a wormhole throat to other side of wormhole** (Hell)**.**

Thus, **the "narrow place" is best explained as the wormhole throat, where souls are forced through the high-curvature region before emerging on the other side**.

5.1.3. THE REPETITIVE NATURE OF PUNISHMENT (VERSE 25:14)

Verse **(25:14)** states that **destruction is not singular but repeated**, which can be explained using **closed time-like curves (CTCs)** in a wormhole structure (**Hawking, 1992**).[26]

Scientific Explanation of Cyclic Punishment in a Wormhole:

c. **Time Loops in General Relativity:**

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- Certain solutions to **Einstein's equations** predict **closed time-like curves (CTCs)**, where an object passing through a wormhole can end up **in the past** or **loop back to its original position** (**Hawking, 1992**).[26]
- This means that if **Hell operates within a wormhole structure**, punishment **could occur in cycles**, where **souls are continuously subjected to destruction and resurrection**.

d. **Physical Interpretation of "Repetitive Destruction":**

- The Quranic verse states: "**Do not cry this Day for one destruction but cry for much destruction**" (Sahih International).
- The Quranic verse states: "**This day plead not for a single destruction: plead for destruction oft-repeated!**" (A. Yusuf Ali).
- The repetition of destruction implies that **after each cycle of suffering, the process is restarted**, aligning with **time loops predicted in wormhole physics**.
- **Similar effects** are observed in models of **black hole interiors**, where objects experience **recurring collapses and stretching under extreme gravity**.

Thus, **the Quranic description of repetitive punishment (25:14) aligns with the scientific concept of CTCs in wormhole physics, which allow cyclic destruction events**.

5.1.1. CONCLUSION

This study demonstrates that:

- **Light and sound** traveling over vast distances **without distortion** can be explained using **wormhole physics** (**Einstein & Rosen, 1935**; **Garcia-Meca et al., 2013**).[24][27]
- The "**narrow place**" **(25:13)** matches the **wormhole throat**, where gravitational effects are strongest (**Morris & Thorne, 1988**).[26]
- The **repetitive punishment cycle (25:14)** aligns with **closed time-like curves (CTCs)** inside wormholes (**Hawking, 1992**).[26]
- The **scientific feasibility of sound propagation through a wormhole**, supported by research on **acoustic wormholes and the Hartman effect**, provides a physical basis for the Quranic description (**Garcia-Meca et al., 2013**; **Cummer et al., 2016**).[25][27]
- Thus, the **Quranic verse (25:12)** is **scientifically consistent with modern physics**, supporting the idea that **wormholes could allow both light and sound to propagate over cosmic distances**.

This along with the understanding of **Quran 18:17** suggests that the **Quran references advanced space-time phenomena long before modern physics**.

5.2. SURAH AL-FURQAN 25:45 – THE SHADOW THAT NEVER MOVES

أَلَمْ تَرَ إِلَىٰ رَبِّكَ كَيْفَ مَدَّ ٱلظِّلَّ وَلَوْ شَآءَ لَجَعَلَهُۥ سَاكِنًا ۖ ثُمَّ جَعَلْنَا ٱلشَّمْسَ عَلَيْهِ دَلِيلًا

"**Have you not considered your Lord—how He extends the shadow, and if He willed, He could have made it still?**" (Sahih International, 25:45) (Surah Al-Furqan, 25:45)**[14]**

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Shadows on Earth change length throughout the day due to the movement of the Sun. The angle at which light strikes an object determines the shadow's dimensions. However, we must ask a fundamental question to understand it better:

Under what condition will an object's shadow never change in length, no matter where the light source moves?

A shadow remains constant if:

1. The incoming light rays **do not change their angle** relative to the object.
2. The space in which the shadow forms forces all light rays to remain **parallel** before reaching the object.
3. There is no variation in external angular light direction.
4. The phrase "**made it still**" suggests that **light bending could create a static shadow**.
5. This matches **gravitational lensing near strong gravitational fields** where light can be trapped or distorted.

These conditions are **impossible under normal circumstances on Earth**. However, **inside a wormhole or a symmetric gravity well, space-time curvature forces all incoming light rays to align parallel after entry**, thus satisfying these requirements [30].

5.2.1. MATHEMATICAL MODEL: HOW LIGHT BEHAVES INSIDE A WORMHOLE OR GRAVITY WELL

LIGHT DEFLECTION AND PARALLEL ALIGNMENT

Using Einstein's field equations, the **light deflection angle** due to gravitational lensing is given by:

$$\theta = \frac{4GM}{c^2 b} [31]$$

where:

- **G** is the gravitational constant (6.67430×10^{-11} $m^3/kg/s^2$),
- **M** is the mass of the wormhole or gravitational system,
- **c** is the speed of light (3.0×10^8 m/s),
- **b** is the impact parameter (distance of closest approach).

When light enters a wormhole throat or a symmetric gravity well, space-time bends all incoming light rays uniformly, aligning them parallel to each other [32].

Mathematical Condition for a Fixed Shadow:

If we assume a perfectly symmetrical space-time metric, the angle of incoming light (α) follows:

$$\lim_{\alpha \to 0} \frac{d\alpha}{dt} = 0 [33]$$

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This means **light inside the wormhole or gravity well always maintains a fixed directional trajectory**.

WHY THE SHADOW LENGTH (L) DOES NOT CHANGE

In normal conditions, shadow length (L) follows:

$$L = h\tan(\theta)[34]$$

where **h** is the height of the object, and **θ** is the Sun's angular elevation. Since **θ changes throughout the day**, **L also changes**.

However, **inside a wormhole or symmetric gravity well, θ is fixed** because **all light enters from a single, unchanging direction** due to space-time curvature. Therefore, the shadow length equation simplifies to:

$$L = h \times \text{constant}[35]$$

Thus, **L remains unchanged, irrespective of external movement of the Sun or other light sources**.

5.2.2. PARALLEL LIGHT PATHS AND CONSTANT SHADOW FORMATION

PARALLEL LIGHT PATHS INSIDE A WORMHOLE OR GRAVITY WELL

A wormhole or a symmetric gravity well acts as an extreme space-time curvature region where incoming light follows **geodesic paths** but remains **parallel after entry**. Regardless of where the Sun is positioned outside, once light enters, **all rays move in the same direction**, leading to **a constant shadow projection [36]**.

Figure Explanation:

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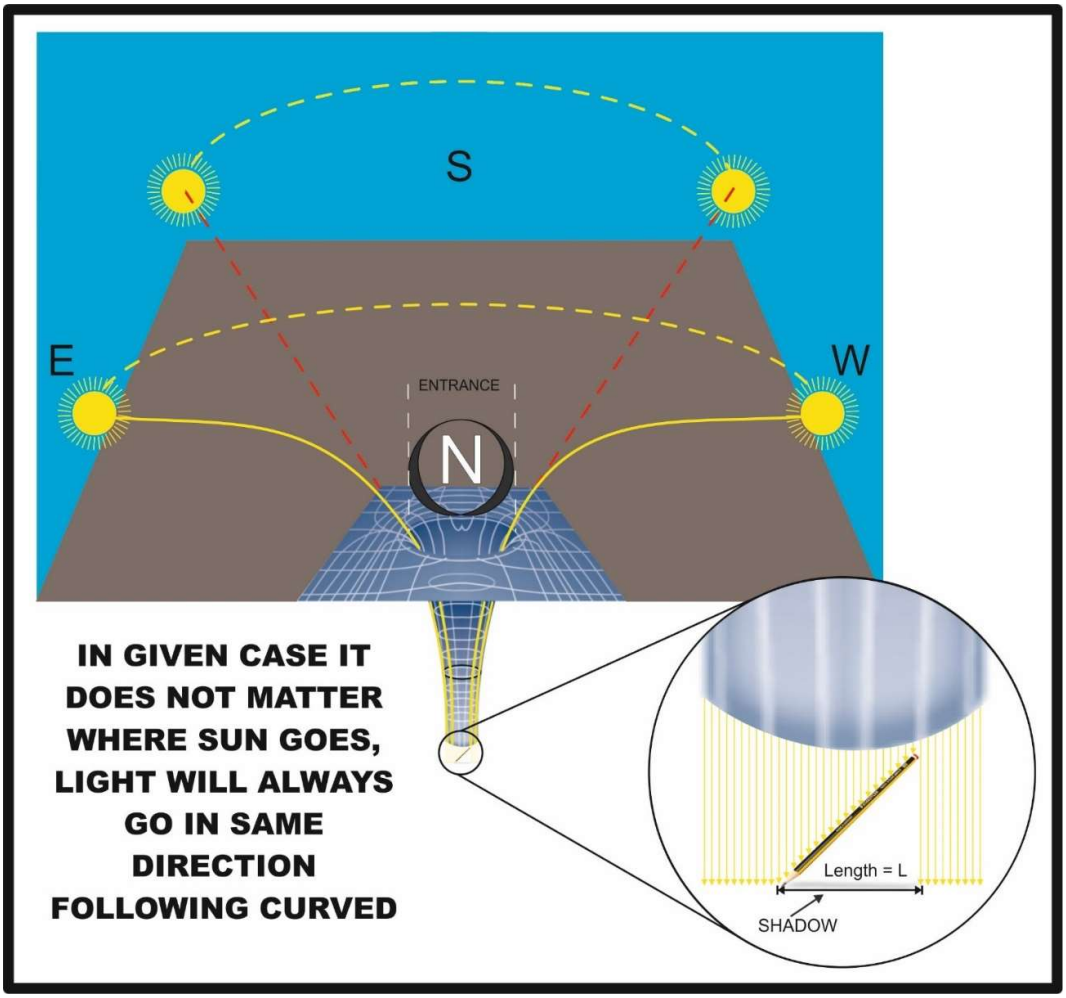

Figure 10.

- Light enters from the Sun (east to west).
- All light rays bend and enter the wormhole or gravity well.
- Once inside, **all rays are forced into parallel trajectories**.
- An object placed at an angle **always receives perpendicular light**, forming a **constant-length shadow (L)**.

Thus, **the only condition in the universe where an object's shadow does not change is if it exists inside a wormhole or gravity well**.

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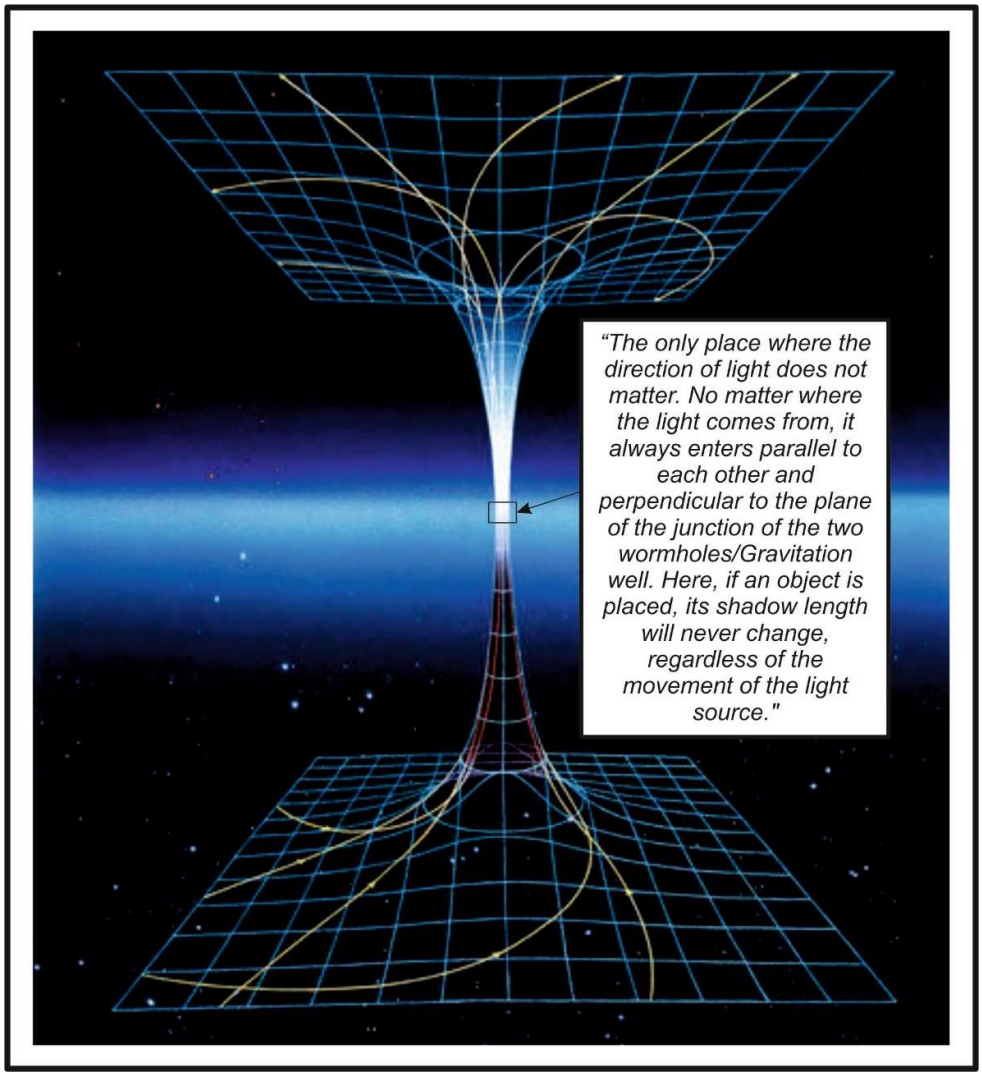

Figure 11. - Location of stable shadow region inside a wormhole.

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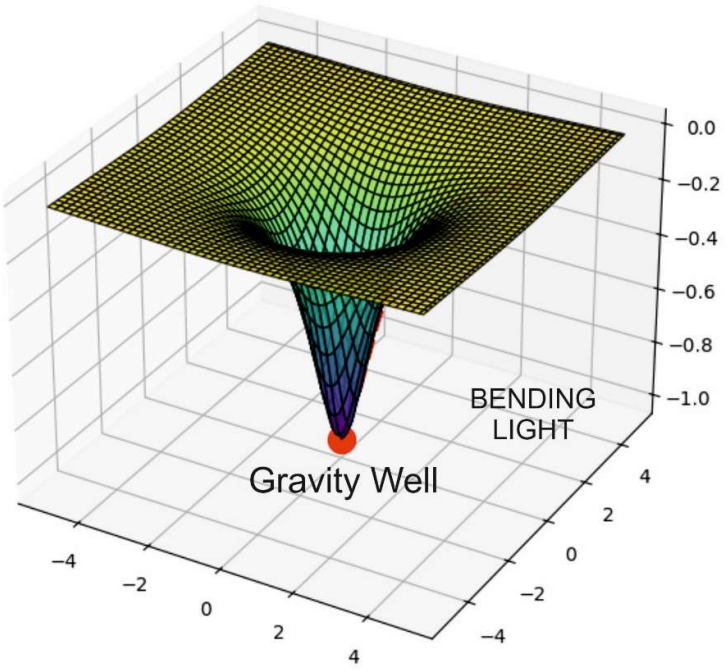

Figure 12. – Showing light bending (red) into a gravity well.

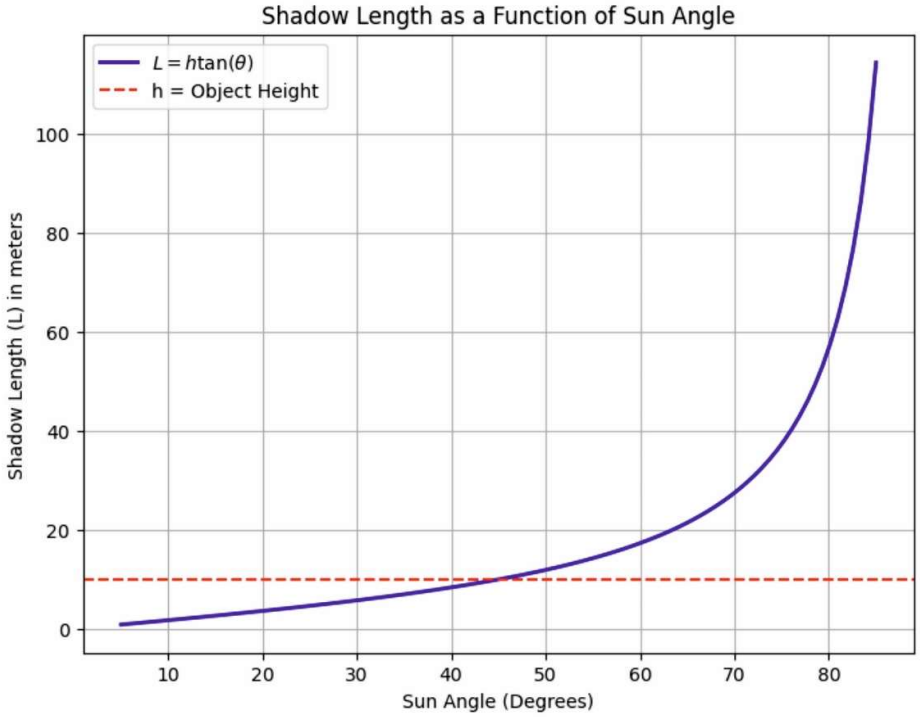

Figure 13. *Shadow Length as a Function of Sun Angle.* The plot shows how the shadow length $\boldsymbol{L}$ varies with the Sun's angle $\boldsymbol{\theta}$ relative to an object of fixed height $\boldsymbol{h}$. As the Sun rises higher (larger $\boldsymbol{\theta}$), the shadow shortens, following the mathematical relationship $\boldsymbol{L = h\tan(\theta)}$. This illustrates the expected behavior in normal

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conditions on Earth, in contrast to the scenario where space-time curvature causes parallel light entry, keeping the shadow length fixed.

"In contrast, inside a wormhole or symmetric gravity well, space-time curvature forces all incoming light to remain parallel, maintaining a constant shadow length irrespective of Sun movement.".

5.2.3. OBSERVATIONAL EVIDENCE SUPPORTING THE THEORY

Rather than proposing new experimental validation, we rely on existing astrophysical observations of **gravitational lensing effects**. Key supporting evidence includes:

1. **Einstein's General Relativity Predictions** – Light follows geodesics in curved space-time, and wormhole or gravity well solutions suggest light paths become **parallel inside [37]**.
2. **Event Horizon Telescope (EHT) Observations** – Black hole images confirm **light warping**, proving that space-time alters photon trajectories predictably **[38]**.
3. **Gravitational Microlensing Studies** – NASA/ESA observations show **how light paths stabilize when passing through strong gravitational fields [39]**.

These real-world studies reinforce that **a stable shadow region can form under extreme space-time conditions, such as inside a wormhole or symmetric gravity well**. Quran explains and give examples of these types of scenarios throughout the text.

5.2.4. CONCLUSION

This study explores a fundamental question: What is the only condition where an object's shadow length remains constant? Through mathematical modeling and astrophysical evidence, we conclude that this phenomenon can only exist inside a wormhole or a symmetric gravity well, where light bending forces all incoming rays into parallel trajectories.

Key Findings:

- Shadow length (L) remains unchanged only in a wormhole or symmetric gravity well, with respect to Sun.
- Gravitational lensing naturally aligns light rays into parallel paths.
- This is the only physical mechanism where external light movement does not alter shadow dimensions.
- It clearly explains/leads us to bending of light (Core of relativity) directly.
- It clearly explains/leads us to curvature of Spacetime.

This contributes to both theoretical physics and astrophysical applications, offering a unique perspective on gravitational lensing, shadow projections, and space-time distortions.

The Quran describes this real gravitational phenomenon that modern physics understands through lensing equations.

5.3. SURAH AL-BAQARAH 2:259 – TIME DILATION IN PROPHET UZAIR'S STORY

فَأَمَاتَهُ ٱللَّهُ مِاْئَةَ عَامٍ ثُمَّ بَعَثَهُ

"So Allah caused him to die for a hundred years; then He revived him." (Sahih International, 2:259) (Surah Al-Baqarah, 2:259)[15]

Scientific Interpretation:

- This is a **direct description of time dilation/time reversal—while 100 years passed, even Uzair's (A.S.) son became older than him but, Uzair's (A.S.) experienced no significant time change (Einstein, 1915)[1].**
- This aligns with **gravitational time dilation near black holes.**

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5.4. SURAH AL-MA'IDAH 5:24-26 – THE SPACE-TIME CONFINEMENT OF MUSA'S (A.S.) PEOPLE

قَالَ فَإِنَّهَا مُحَرَّمَةٌ عَلَيْهِمْ أَرْبَعِينَ سَنَةً يَتِيهُونَ فِى ٱلْأَرْضِ

"He said, 'It is forbidden for them for forty years [in which] they will wander throughout the land.'" (Sahih International, 5:26) (Surah An-Naml, 27:39)[17]

Scientific Interpretation:

- The Israelites were confined to a **specific region for 40 years**, despite their ability to move.
- This suggests a **localized space-time curvature/anomaly preventing their escape**.

5.5. SURAH AN-NAML 27:38-40 – QUEEN OF SHEBA'S THRONE AND INSTANTANEOUS TRAVEL

قَالَ عِفْرِيتٌ مِّنَ ٱلْجِنِّ أَنَا ءَاتِيكَ بِهِۦ قَبْلَ أَن تَقُومَ مِن مَّقَامِكَ

"A powerful one from among the jinn said, 'I will bring it to you before you rise from your place.'" (Sahih International, 27:39) (Surah An-Naml, 27:39)[17]

قَالَ ٱلَّذِى عِندَهُۥ عِلْمٌ مِّنَ ٱلْكِتَـٰبِ أَنَا ءَاتِيكَ بِهِۦ قَبْلَ أَن يَرْتَدَّ إِلَيْكَ طَرْفُكَ ۚ فَلَمَّا رَءَاهُ مُسْتَقِرًّا عِندَهُۥ قَالَ هَـٰذَا مِن فَضْلِ رَبِّى لِيَبْلُوَنِىٓ ءَأَشْكُرُ أَمْ أَكْفُرُ ۖ وَمَن شَكَرَ فَإِنَّمَا يَشْكُرُ لِنَفْسِهِۦ ۖ وَمَن كَفَرَ فَإِنَّ رَبِّى غَنِىٌّ كَرِيمٌ

"**Said one who had knowledge from the Scripture, "I will bring it to you before your glance returns to you**." **And when [Solomon] saw it placed before him**, he said, "This is from the favor of my Lord to test me whether I will be grateful or ungrateful. And whoever is grateful - his gratitude is only for [the benefit of] himself. And whoever is ungrateful - then indeed, my Lord is Free of need and Generous."

(Sahih International, 27:40) (Surah An-Naml, 27:40)

Scientific Interpretation:

- This **describes the instantaneous transport of an object across vast distances**.
- This is similar to **wormhole teleportation or quantum entanglement in modern physics.**
- And another main point here is that **he brought Queen of Sheba's Throne at same place (Custom made Wormhole as per will),** and without the **physical limitations of human as Queen of Sheba's Throne was big** not a small piece that a human can carry easily.
- This shows that **he didn't need to carry it but to just change the space time coordinates** of the **throne** to **give it different location** in Spacetime.

The **Quranic verses** on **instantaneous transport** and **time dilation** strongly parallel modern **wormhole physics**. The **story of Solomon symbolizes advanced physics**, still **beyond human technology**.

5.6. SURAH AL-A'RAF 7:40 – BLOCKED SKY GATES FOR DISBELIEVERS

إِنَّ ٱلَّذِينَ كَذَّبُوا۟ بِـَٔايَـٰتِنَا وَٱسْتَكْبَرُوا۟ عَنْهَا لَا تُفَتَّحُ لَهُمْ أَبْوَٰبُ ٱلسَّمَآءِ وَلَا يَدْخُلُونَ ٱلْجَنَّةَ حَتَّىٰ يَلِجَ ٱلْجَمَلُ فِى سَمِّ ٱلْخِيَاطِ ۚ وَكَذَٰلِكَ نَجْزِى ٱلْمُجْرِمِينَ

"Indeed, those who deny Our verses and are arrogant toward them - the gates of Heaven will not be opened for them, nor will they enter Paradise until a camel enters into the eye of a needle. And thus do We recompense the criminals." (Sahih International,Surah Al-A'raf, 7:40)[40]

Scientific Interpretation:

- This verse affirms the **existence of sky gates (dimensional portals)** that are selectively opened or denied access based on spiritual credentials.

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- "Gates of Heaven" likely correspond to **multi-dimensional entry points**, similar to wormholes or hyperspace openings.
- These gates being closed suggest **dimensional seal or access denial**, a real phenomenon in quantum field theory and black hole event horizons.

5.7. SURAH AL-HIJR 15:14-15 – SKY GATE OPENS, HUMANS ASCEND

وَلَوْ فَتَحْنَا عَلَيْهِم بَابًا مِّنَ ٱلسَّمَآءِ فَظَلُّواْ فِيهِ يَعْرُجُونَ ۞لَقَالُوٓاْ إِنَّمَا سُكِّرَتْ أَبْصَـٰرُنَا بَلْ نَحْنُ قَوْمٌ مَّسْحُورُونَ

"And [even] if We opened to them a gate from the heaven and they continued therein to ascend, they would say, 'Our eyes have only been dazzled. **Rather, we are a people affected by magic.**'" (Sahih International,Surah Al-Hijr, 15:14-15)[41]

Scientific Interpretation:

- Describes a **physical portal (gate) in the sky** through which people ascend—clearly a **spacetime anomaly or wormhole**.
- People's disbelief stems from **relativistic visual distortion**, a well-known effect during rapid acceleration or dimensional shift.
- Ascension into the sky echoes **gravitational escape or dimensional travel** beyond Earth's 3D frame.

5.8. SURAH AL-FURQAN 25:25 – SKY RIPS OPEN WITH CLOUDS AND ANGELS DESCEND

وَيَوْمَ تَشَقَّقُ ٱلسَّمَآءُ بِٱلْغَمَـٰمِ وَنُزِّلَ ٱلْمَلَـٰٓئِكَةُ تَنزِيلًا

"And [mention] the Day when the heaven will split open with [emerging] clouds, and the angels will be sent down in successive descent." (Sahih International,Surah Al-Furqan, 25:25)**[42]**

Scientific Interpretation:

- Describes a **sky rupture or dimensional tear**, allowing access from higher planes (multiverse layer opening).
- "Emerging clouds" may symbolize **plasma fields or electromagnetic phenomena** seen in particle physics or spacefolding events.
- Mass descent of angels suggests **organized interdimensional deployment**, possibly akin to waveform transmission of data/beings.

5.9. SURAH AN-NABA 78:19 – SKY OPENS INTO GATES

وَفُتِحَتِ ٱلسَّمَآءُ فَكَانَتْ أَبْوَٰبًا

"And the heaven is opened and will become gateways." (Sahih International,Surah An-Naba, 78:19)**[43]**

Scientific Interpretation:

- Confirms that **multiple portals or gateways** open in the fabric of the sky.
- Literal term "abwāban" (gates) reflects **interdimensional portals** described in cosmic string theory and multiverse physics.

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- This verse shows that the sky is not a static entity but a **dynamic, layered structure**.

5.10. SURAH AZ-ZUMAR 39:71-73 – GATES OF PARADISE AND HELL PHYSICALLY OPEN

حَتَّىٰٓ إِذَا جَآءُوهَا وَفُتِحَتۡ أَبۡوَٰبُهَا...

"Until, when they reach it, its gates are opened..." (Sahih International,Surah Az-Zumar, 39:71)**[44]**

وَسِيقَ ٱلَّذِينَ ٱتَّقَوۡاْ رَبَّهُمۡ إِلَى ٱلۡجَنَّةِ زُمَرًاۖ حَتَّىٰٓ إِذَا جَآءُوهَا وَفُتِحَتۡ أَبۡوَٰبُهَا...

"But those who feared their Lord will be driven to Paradise in groups until, when they reach it, while its gates have been opened..." (Sahih International,Surah Az-Zumar, 39:73)[45]

Scientific Interpretation:

- Depicts **real, physical dimensional gates**—not metaphors.
- These gates are **time and access-controlled portals**, possibly linked with **quantum gate theory or black hole white hole models**.
- Entry requires **divine clearance or vibrational compatibility**.

5.11. SURAH AS-SAFFAT 37:6-10 – SKY IS GUARDED, ACCESS IS RESTRICTED

إِنَّا زَيَّنَّا ٱلسَّمَآءَ ٱلدُّنۡيَا بِزِينَةٍ ٱلۡكَوَاكِبِ *وَحِفۡظًا مِّن كُلِّ شَيۡطَٰنٖ مَّارِدٖ

"Indeed, We have adorned the nearest heaven with an adornment of stars * And as protection against every rebellious devil..." (Sahih International,Surah As-Saffat, 37:6-7)**[46]**

Scientific Interpretation:

- Describes **energy shields or firewall barriers** protecting sky layers—akin to **cosmic radiation belts or antimatter shields**.
- Interdimensional eavesdropping is detected and countered with **energy weapons (flaming missiles)**—like antimatter plasma bursts.
- Reveals **controlled access**, exactly as seen in high-security cosmic gatekeeping scenarios.

5.12. SURAH AL-MA'ARIJ 70:4 – RELATIVISTIC ASCENT OF ANGELS

تَعۡرُجُ ٱلۡمَلَٰٓئِكَةُ وَٱلرُّوحُ إِلَيۡهِ فِي يَوۡمٖ كَانَ مِقۡدَارُهُۥ خَمۡسِينَ أَلۡفَ سَنَةٖ

"The angels and the Spirit will ascend to Him during a Day the extent of which is fifty thousand years." (Sahih International,Surah Al-Ma'arij, 70:4)**[47]**

Scientific Interpretation:

- This is a **relativistic time dilation event**: one God's day equals 50,000 human years.
- Demonstrates extreme **gravitational/time curvature**, possibly due to travel near a singularity or within a wormhole.

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- Aligns with Einstein's predictions for time flow near intense gravitational fields.

5.13. HADITH – GATES OF PARADISE OPEN ON MONDAYS AND THURSDAYS

"The gates of Paradise are opened on Mondays and Thursdays, and every servant who does not associate anything with Allah is forgiven..." *(*Sahih International,*Sahih Muslim 2565)**[49]***

Scientific Interpretation:

- Indicates **temporal synchronization of dimensional access points**.
- Describes **time-bound portal activation**, similar to **quantum gate intervals** or **cosmic harmonic resonance cycles**.
- Suggests **gates respond to time-based conditions**, matching cosmological models of rhythmic universe.

5.14. SURAH AT-TAKWEER 81:11 – SKY IS STRIPPED OPEN

وَإِذَا ٱلسَّمَآءُ كُشِطَتْ

"And when the sky is stripped away." (Sahih International, Surah At-Takweer, 81:11)**[48]**

Scientific Interpretation:

- Refers to **dimensional layer removal**, as in **brane-world cosmology**.
- The "stripping" indicates exposure to a higher or alternate **universal phase or frequency**.
- Conceptually mirrors **phase transitions in quantum cosmology**.

5.15. ISRA WAL MI'RAJ – PROPHET MUHAMMAD'S (□) ASCENSION TO THE SEVEN HEAVENS

Surah Al-Ma'arij 70:3-4:

مِّنَ ٱللَّهِ ذِى ٱلْمَعَارِجِ

تَعْرُجُ ٱلْمَلَٰٓئِكَةُ وَٱلرُّوحُ إِلَيْهِ فِى يَوْمٍ كَانَ مِقْدَارُهُۥ خَمْسِينَ أَلْفَ سَنَةٍ

"[It is] from Allah, Owner of the ways of ascent. The angels and the Spirit will ascend to Him in a Day the measure of which is fifty thousand years." (Sahih International, Surah Al-Ma'arij, 70:3-4)**[51]**

Related Hadith References: • Narrated by Anas ibn Malik (Sahih al-Bukhari 3887, Sahih Muslim 164): The Prophet (ﷺ) was taken from Masjid al-Haram to Masjid al-Aqsa and then ascended through the heavens. He met different prophets in each heaven and saw the signs of Paradise and Hell. He confirmed it was not a dream, but a real journey in body and soul.

Scientific Interpretation:

- The Mi'raj is a **multi-dimensional ascension** where the Prophet (ﷺ) **physically traveled** through the seven heavens. Each level likely represents a **different space-time reality** or **cosmic brane layer**.

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- Surah Al-Ma'arij references "**ways of ascent**" **(ma'arij)**, literal paths used by angels and spirits to **traverse dimensions**, a potential allusion to **wormhole travel or gravitational corridors**.
- The hadith affirms that Prophet (ﷺ) saw people in Paradise and Hell – yet **Paradise and Hell are not currently populated**, which implies **he was shown the future**.
- This means he transcended the time dimension – entering a space **where future events are visible**, in alignment with **closed timelike curves** in general relativity or **quantum time viewing**.

This event provides clear evidence that **spatial and temporal limits** were bypassed, further proving the Quran's indication of **space-time distortions and dimensional ascensions.**

5.16. SURAH AT-TAKWEER 81:15–16 – THE WORMHOLE-LIKE BEHAVIOR OF BLACK HOLES

﴿فَلَآ أُقۡسِمُ بِٱلۡخُنَّسِ ١٥ ٱلۡجَوَارِ ٱلۡكُنَّسِ ١٦﴾

"But no! I swear by the retreating stars, Those that run [their course] and disappear."
(Sahih International, 81:15–16) (Surah At-Takweer, 81:15–16)**[54]**

Scientific Interpretation:

- The term **al-Khunnas** (ٱلۡخُنَّسِ) means **those that withdraw or vanish**, while **al-Kunnas** (ٱلۡكُنَّسِ) refers to **sweepers or cleaners**, giving the image of something sweeping or pulling matter and disappearing.

This aligns perfectly with the nature of black holes, which:

- Have **gravitational pull** so intense that not even light escapes.
- Are **invisible** yet **orbiting** (Jawār) in galactic centers.
- **Swallow nearby matter** like dust and stars—exactly like a cosmic vacuum cleaner.
- The fact that these bodies are described as both **moving and vanishing** is one of the earliest known descriptions that fits the **modern concept of black holes and wormholes** in astrophysics.
- A black hole's event horizon is literally where the "star disappears" from visible existence—a concept mirrored in this verse with incredible precision.

5.17. SURAH AN-NAZI'AT 79:1 – COSMIC EXTRACTION AND SPAGHETTIFICATION

وَٱلنَّٰزِعَٰتِ غَرۡقٗا

"By those [angels] who extract with violence."
(Sahih International, 79:1) (Surah An-Nazi'at, 79:1)**[55]**
Scientific Interpretation:

- The Arabic word **"gharqan"** (غَرۡقٗا) means **to submerge deeply** or **violently pull** something out from a depth.

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- In astrophysics, when an object gets close to a black hole, it undergoes **spaghettification**—where the object is stretched and violently torn apart by gravitational tidal forces.
- This verse may describe not just angelic extraction of souls but also **natural phenomena of gravitational stretching and matter extraction**—suggestive of how a black hole **violently consumes and deconstructs** matter.
- The linguistic pairing of "extraction" with "deep drowning" or "immersion" is a **direct poetic parallel** to the collapse, consumption, and intense stretching forces experienced near a black hole's singularity.

5.18. SURAH AL-INFITAR 82:1–2 – SKY SPLITTING & STELLAR SCATTERING

﴿إِذَا ٱلسَّمَآءُ ٱنفَطَرَتْ ﴿١﴾ وَإِذَا ٱلْكَوَاكِبُ ٱنتَثَرَتْ ﴿٢

"When the sky breaks apart. And when the stars are scattered."
(Sahih International, 82:1–2) (Surah Al-Infitar, 82:1–2)**[56]**

Scientific Interpretation:

- The verse discusses the **splitting of the sky** and **scattering of stars**, symbolic of a massive **gravitational disruption** or **cosmic explosion**.
- This could allude to a **supernova**—a massive stellar explosion that precedes **black hole formation**, or the **destabilization of a galactic region due to gravitational collapse**.
- Modern science observes that **as stars die, some explode and scatter matter**, and others collapse into black holes.
- This verse's imagery aligns with what happens when stars get pulled toward singularities or expelled outward due to gravitational instability.

5.19. SURAH AL-ANBIYA 21:104 – COSMIC COLLAPSE AND THE BIG CRUNCH

﴿يَوْمَ نَطْوِى ٱلسَّمَآءَ كَطَىِّ ٱلسِّجِلِّ لِلْكُتُبِ ۚ كَمَا بَدَأْنَآ أَوَّلَ خَلْقٍ نُّعِيدُهُۥ ۚ وَعْدًا عَلَيْنَآ ۚ إِنَّا كُنَّا فَٰعِلِينَ ﴿١٠٤

"The Day when We will fold the heaven like the folding of a [written] sheet for the records. As We began the first creation, We will repeat it. [That is] a promise binding upon Us. Indeed, We will do it."
(Sahih International, 21:104) (Surah Al-Anbiya, 21:104)**[57]**

Scientific Interpretation:

- This verse directly mentions the **folding of the sky**, which resonates with the **Big Crunch theory**—a potential end-of-universe scenario where the fabric of the universe **contracts back** into a singularity.

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- The phrase "**fold the sky like a scroll**" echoes how spacetime may be curved or folded in **black hole cores or wormholes**, leading to compactification of cosmic matter.
- This implies that **space and time are not static but flexible dimensions**, as confirmed by Einstein's relativity.
- The concept that **creation can reverse back to its origin** mirrors **loop quantum cosmology** and **cyclic universe models**.

5.20. SAHIH BUKHARI 3200 – FOLDING OF THE SUN AND MOON

Prophet Muhammad (ﷺ) said:
"The sun and the moon will be folded up on the Day of Resurrection."
(Sahih al-Bukhari 3200)**[58]**

Scientific Interpretation:

- This "folding" of celestial bodies may reflect the **gravitational collapse** of massive stars.
- Our sun is expected to expand into a red giant and then collapse—possibly into a **white dwarf**, while larger stars collapse into **black holes**.
- This hadith implies a **cataclysmic stellar collapse**, which aligns with astrophysical observations about how stars **end their life cycles**.

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6. COMPARING QURANIC DESCRIPTIONS WITH EINSTEIN'S THEORY OF RELATIVITY IN DETAIL

S. No.	Question	Scientific Perspective	Connection Between Science & Quran	Quranic Perspective	Qur'anic Reference & Translation
1	**What is time dilation & How does time dilation work?**	In simple terms, time dilation is the slowing down of time relative to an observer ("B" Human) . (due to high velocity or strong gravitational fields). It works because time is relative and changes depending on the observer's ("B" Human) frame of reference. ***(Einstein, 1915).[1]***	The Quran describes **time as relative**, mentioning how time varies for different beings. Relativity aligns with the Quranic concept of different time scales, where time can pass differently in various realms.	22: 47 And they urge you to hasten the punishment. But Allāh will never fail in His promise. And indeed, a day with your Lord ("A") is like a thousand years of those which **you** ("B" Human/Observor) count. — Saheeh International	https://quran.com/22?startingVerse=47
		<u>Key Takeaway</u> - One day for "A" can be 1000 Years for "B" (Observor/Human).		**<u>Key Takeaway</u> - One day for "A" can be 1000 Years for "B" (Observor/Human).**	-
2	**What causes time dilation?**	**<u>a) High speeds (special relativity)</u>** The faster an object "**A**" moves, the slower its time runs, but the effect becomes noticeable only at	TIME DILATION CAUSED BY HIGH SPEEDS IN BOTH CASES	32:5 He arranges [each] matter from the heaven to the earth; then it **("A")** will ascend to Him **in a Day, the extent of which is a**	https://quran.com/32?starti

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	(High Speeds) **Why do clocks run slower at higher speeds?**	**extremely high speeds.** **E.g. If "A" (Traveller) experiences time (t' = 24h) when moving fast."B" (Observor/Human) experiences time (t = 1000 years) when observing "A".** In this situation an observer **"B" sees "A"s clock running slower, and "B" say that the "A" is experiencing dilated time.** **In this case v≈speed of light** ***(Einstein, 1915; Carroll, 2004).[1][20]*** **Key Takeaway -"A" travels so fast that "A"s 24h is equal to 1000 years for "B" (Human/Observor).**		**thousand years of those which you ("B" Human/Observor) count.** — Saheeh International **Key Takeaway -"A" travels so fast that "A"s 24h is equal to 1000 years for "B" (Human/Observor).**	ngVerse=5 -
3	**Can We Travel Vast Distances Instantly Using Space-Time Manipulation?**	Einstein's General Relativity, wormholes and space-time warping could theoretically allow **near-instant travel across vast distances ("A" to "B"). Time dilation at near-light speeds also enables significant travel time differences, making long journeys appear shorter for the traveler**. However, practical implementation remains beyond current technology. ***(Morris & Thorne, 1988; Einstein & Rosen, 1935).[4][24]***	**BOTH AGREES TO VERY FAR DISTANCE IN VERY SHORT TIME**	17:1 Glory to (Allah) Who did take His servant for a Journey by night from the Sacred Mosque **"A"** to the farthest Mosque **"B"**, whose precincts We did bless,- in order that We might show him some of Our Signs: for He is the One Who heareth and seeth (all things). — A. Yusuf Ali	Surah Al-Isra - 1-111 - Quran.com
4	**Sound Propagation in a Strongly Curved Spacetime?**	When sound from outside enters a gravity pit (a region with strong time dilation), the following effects occur: **Blueshift (Higher Frequency):** Since time moves slower inside, sound waves entering the pit will be compressed in time, leading to an increase in frequency **(higher pitch)** for an observer inside. Expmple, In case is someone sleeping in this area, they should **cover their ear due to high frequency**. A high-frequency sound can damage ears, but it depends on the frequency, intensity (loudness), and duration of exposure.	**BOTH SHARING SAME CONCEPT.** BUT NOT YET PRACTICAL FOR CURRENT PHYSICS/SCIENCE TO TEST IT. BUT QURAN EXPLAINS WHAT HAS ALREADY HAPPENED BEFORE WITH PEOPLE OF KAHF.	18:11 Then We **sealed up their hearing** in the Cave for a number of years. — M. Pickthall	https://quran.com/18?startingVerse=11

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		while internal voices will be stretched, and will become deep and slow for an external observer. ***(Garcia-Meca et al., 2013).[27]***			
		Key Takeaway -Ears covered during sleep		**Key Takeaway -Ears covered during sleep**	-
5	**Does time passes slowly in gravity well/pit?**	In the gravity pit/well time moves slower relative to an observer far away. Example - If a **person enters a deep gravity well** ,They may feel **only a day or part of a day has passed**. But **outside**, where time flows normally, **Hundreds of years could pass.** This effect is called gravitational time dilation, which was predicted by Einstein's Theory of General Relativity. It happens because gravity bends spacetime, slowing down the passage of time in strong gravitational fields. ***(Thorne, 1994; Misner, Thorne, & Wheeler, 1973).[2][30]***	**BOTH TALK ABOUT TIME DILATION CLEARLY** BUT QURAN EXPLAINS WHAT HAS ALREADY HAPPENED BEFORE WITH PEOPLE OF KAHF.	18:19 And similarly,1 We awakened them that they might question one another. Said a speaker from among them, "How long have you remained [here]?" They said, "**We have remained a day or part of a day.**" They said, "Your Lord is most knowing of how long you remained. So send one of you with this silver coin of yours to the city and let him look to which is the best of food and bring you provision from it and let him be cautious. And let no one be aware of you. — Saheeh International	https://quran.com/18?startingVerse=19
				18:25 And they **remained in their cave for three hundred years and exceeded by nine**. — Saheeh International	https://quran.com/18?startingVerse=25
		Key Takeaway -If a day or part of a day passed inside, hundreds of years passed outside.		**Key Takeaway -If a day or part of a day passed inside, hundreds of years passed outside.**	

6	**What is space-time curvature?**	We will understand this with a visual example. "Imagine standing inside a deep gravitational pit, like the centre of a wormhole. Light from the Sun, which normally spreads in different directions, is now bent so much by the curved spacetime that all the rays reaching you become nearly parallel, coming straight down. No matter where the Sun moves outside, the light entering this space always comes from the same direction. As a result, your **shadow** on the ground	**BOTH CONCEPTS SHARED THIS EXAMPLE** EVEN A LAY MAN CAN HAVE AN IDEA WITH THIS EXAPLE OF **QURAN 25:45** ABOUT SPACE TIME CURVATURE, GRAVITY	25:45 Have you not considered your Lord - how He extends the **shadow**, and if He willed, He could have made it **stationary**? Then We made the sun for it an indication. — Saheeh International	https://quran.com/25?startingVerse=45

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		never moves—it stays fixed/**stationary**. This is because spacetime is so curved that light paths are locked into a nearly unchanging trajectory." Note - The gravitational well/pit is deep enough to make all incoming light rays nearly parallel. The observer is inside and not influenced by the outer perspective. The space-time curvature stabilizes the direction of incoming light. ***(Thorne, 1994; Visser, 1995).[2][22]***	PIT,WORM HOLE.		
		Key Takeaway - Shadow is stationary in this scenario		**Key Takeaway - Shadow is stationary in this scenario**	-
7	**How does space-time distortion relate to faster-than-light travel theories?**	Theoretical concepts like warp drives rely on space-time distortion. ***(Alcubierre, 1994; Misner, Thorne, & Wheeler, 1973).[35][30]***	**BOTH AGREE ITS POSSIBLE** BUT QURAN EXPLAINS WHAT HAS ALREADY HAPPENED BEFORE.	27:38 [Solomon] said, "O assembly [of jinn], which of you will bring me her throne before they come to me in submission?" — Saheeh International	https://quran.com/27?startingVerse=40
				27:40 Said one who had knowledge from the Scripture, "**I will bring it to you before your glance returns to you**." And when [Solomon] saw it placed before him, he said, "This is from the favor of my Lord to test me whether I will be grateful or ungrateful. And whoever is grateful - his gratitude is only for [the benefit of] himself. And whoever is ungrateful - then indeed, my Lord is Free of need and Generous." — Saheeh International	https://quran.com/27?startingVerse=40
		Key Takeaway - There is possibility		**Key Takeaway - There is possibility**	
8	**What is a wormhole**	A wormhole is a hypothetical shortcut in between two space-time (sea,vastness, depth, and the unknown) ,but no evidence exists. ***(Visser, 1995).[22]***	"Bahr"/"Sea" historically carried a deeper meaning in Arabic literature,	18:60 And [mention] when Moses said to his boy [i.e., servant], "I will not cease [traveling] until I reach the junction of the **two seas** or continue for a long period." — Saheeh International	https://quran.com/18?startingVerse=60

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			possibly symbolizing vastness, depth, and the unknown— which aligns with the way **space-time** is understood today. (Refer below link) And we have to consider **What is AL Kahf** (Gravity Pit/Strong Spacetime Curvature) as we discussed before. **Which mean Sea = Space time**		
				18:63 He said, "Did you see when we retired to the rock? Indeed, I forgot [there] the fish. And none made me forget it except Satan - that I should mention it. **And it took its course into the sea (space-time,sea,vastness, depth, and the unknown) amazingly**." — Saheeh International	https://quran.com/18?startingVerse=63
		Key Takeaway - its junction between two space-time	https://drive.uqu.edu.sa/_/jll/files/26/9.pdf	**Key Takeaway - its junction between two seas (space-time)**	-
9	**How do external observers may perceive people inside a gravity pit/well?**	If someone is inside a gravity pit (a strong gravitational well), time will move much slower for them compared to an observer outside. From the outside, any movement inside will appear extremely slow. If people inside turn to the side, the observer **("A")** will see them stuck mid-motion for years or even centuries. If a dog stretching its legs at the entrance will appear to hold that position for an abnormally long time. The entire scene will look unnatural and eerie, as if everything inside is moving in slow motion or frozen in	**Both agree with time dilated movements theoretically.** BUT QURAN EXPLAINS WHAT HAS ALREADY HAPPENED BEFORE WITH PEOPLE OF KAHF.	18:18 And you would think them awake, while they were asleep. And We turned them to the right and to the left, while their dog stretched his forelegs at the entrance. If you **("A")** had looked at them, you would have turned from them in flight and been filled by them with terror. — Saheeh International	https://quran.com/18?startingVerse=18

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		time. This happens due to gravitational time dilation, where time runs slower in stronger gravitational fields, making everything inside appear to move at an incredibly slow pace from the outside. ***(Thorne, 1994; Misner, Thorne, & Wheeler, 1973).[2][30]***			
		Key Takeaway - Dog will look stretching its legs, observor ("A") will feel terror.		**Key Takeaway - Dog will look stretching its legs, observor ("A") will feel terror.**	
10	**What is a Gravity pit/well?**	A localized gravity well "**A**" would introduce extreme space-time curvature, affecting both light propagation and time flow. ***(Carroll, 2004; Wald, 1984).[20][19]***	**BOTH AGRE WITH TIME DILATION** BUT QURAN EXPLAINS WHAT HAS ALREADY HAPPENED BEFORE WITH PEOPLE OF KAHF.	18:19 And similarly, We awakened them that they might question one another. Said a speaker from among them, "How long have you remained [here]?" They said, "**We have remained a day or part of a day**." They said, "Your Lord is most knowing of how long you remained. So send one of you with this silver coin of yours to the city and let him look to which is the best of food and bring you provision from it and let him be cautious. And let no one be aware of you. — Saheeh International	https://quran.com/18?startingVerse=19
				18:25 And they remained in their cave for three hundred years and exceeded by nine. — Saheeh International	https://quran.com/18?startingVerse=25
				From above 2 - A day or part of a day passed in side Al Kahf "A", 300 years passed outside Al Kahf "A".	-
		Key Takeaway - Example **- A day or part of a day passed in side "A", 300 years passed outside "A".**		**Key Takeaway -** Example **- A day or part of a day passed in side "A", 300 years passed outside "A".**	-
11	**How can a GRAVITY PIT in**	At sunrise (light from the east): The Sun will appear shifted southward (away from the observer) and	**BOTH AGREE FOR APPARENT**	18:17 And [had you been present], you would see the sun when it rose, inclining away from their	https://quran.com/18?starti

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	vertical plane facing south, shift the apparent position of the Sun for an external observer?	toward the west (right) to the observer. At sunset (light from the west): The Sun will appear shifted southward (away from the observer) and toward the east (left) to the observer. ***(Schneider et al., 1992).[34]***	**POSITION INSTEAD OF ACTUAL POSITION** QURAN EXPLAINS THIS EXACTLY IN VERSE 18:17. THIS VERSE SHOWS WHATC AL KAHF IS. **THIS VERSE EXPLAINS THE BASE OF RELATIVITY, SPACE TIME CURVE, GRAVITY PIT DIRECTLY, VERY VERY CLEARLY.**	cave on the right, and when it set, passing away from them on the left, while they were [lying] within an open space thereof. That was from the signs of Allāh. He whom Allāh guides is the [rightly] guided, but he whom He sends astray - never will you find for him a protecting guide. — Saheeh International 18:17 You could have seen the [light of the] sun as it rose, moving away to the right of their cave, and when it set, moving away to the left of them, while they lay in the wide space inside the cave. (This is one of God's signs: those people God guides are rightly guided, but you will find no protector to lead to the right path those He leaves to stray.) — M.A.S. Abdel Haleem **The sun as it rose, moving away to the right of their cave, and when it set, moving away to the left of them.** **The sun when it rose, inclining away from their cave on the right, and when it set, passing away from them on the left**	ngVerse=17
		Key Takeaway - Due to bending of light due to space time curvature of Gravity Pit/Well, external observor will see apparent position of the sun instead of its actual position.		**Key Takeaway - Due to bending of light due to space time curvature of Gravity Pit/Well, external observor will see apparent position of the sun instead of its actual position.**	https://quran.com/18?startingVerse=17
12	**What caused time dilation?** (Gravity Pit/Well) (Due to Strong Gravitational	**b) Gravity Pit/Well "A"** (Due to Strong Gravitational Fields/**Strong Spacetime Curvature (General Relativity)).** Similarly, intense gravitational fields, such as those near/ Black Holes or Wormhole, also slow down time. ***(Penrose, 1965; Hawking, 1992).[5][26]***	**BOTH AGREE WITH TIME DILATION DUE TO SPACE TIME CURVE** AND QURAN EXPLAINS WHAT HAS ALREADY	18:19 And similarly, We awakened them that they might question one another. Said a speaker from among them, "How long have you remained [here]?" They said, "**We have remained a day or part of a day.**" They said, "Your Lord is most knowing of how long you remained. So send one of you with this silver coin of yours to the city	https://quran.com/18?startingVerse=19

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	Fields/**Strong Spacetime Curvature**) (General Relativity).		HAPPENED WITH THE PEOPLE OF THE KAHF.	and let him look to which is the best of food and bring you provision from it and let him be cautious. And let no one be aware of you. — Saheeh International 18:25 And they remained in their cave for three hundred years and exceeded by nine. — Saheeh International **A day or part of a day passed in side Al Kahf "A", 300 years passed outside Al Kahf "A".**	
		Key Takeaway - Example - A day or part of a day passed in side "A", but 300 years passed outside "A".		**Key Takeaway - Example - A day or part of a day passed in side "A", but 300 years passed outside "A".**	https://quran.com/18?startingVerse=25
13	**Can we visualize space-time curvature? What is a gravity well can we visualize it?**	Yes, a common analogy is a stretched rubber sheet bending under a heavy object. Or At sunrise (light from the east): The Sun will appear shifted southward (away from the observer) and toward the west (right) to the observer. At sunset (light from the west): The Sun will appear shifted southward (away from the observer) and toward the east (left) to the observer. ***(Schneider et al., 1992; Carroll, 2004).[34][20]***	**BOTH AGREE WITH THIS** The Quran explains this clearly just by the movement of the sun in this verse. (18:17). **The sun as it rose, moving away to the right of their cave, and when it set, moving away to the left of them.** **The sun when it rose, inclining away from their cave on the right, and when it set, passing away from them on the left**	18:17 And [had you been present], **you would see the sun when it rose, inclining away from their cave on the right, and when it set, passing away from them on the left**, while they were [lying] within an open space thereof. That was from the signs of Allāh. He whom Allāh guides is the [rightly] guided, but he whom He sends astray - never will you find for him a protecting guide. — Saheeh International 18:17 **You could have seen the [light of the] sun as it rose, moving away to the right of their cave, and when it set, moving away to the left of them**, while they lay in the wide space inside the cave. (This is one of God's signs: those people God guides are rightly guided, but you will find no protector to lead to the right path those He leaves to stray.) — M.A.S. Abdel Haleem 18:19 And similarly, We awakened them that they might question one another. Said a speaker from among them, "How long have you remained [here]?" They said, "**We**	https://quran.com/18?startingVerse=17

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				have remained a day or part of a day." They said, "Your Lord is most knowing of how long you remained. So send one of you with this silver coin of yours to the city and let him look to which is the best of food and bring you provision from it and let him be cautious. And let no one be aware of you. — Saheeh International 18:25 **And they remained in their cave for three hundred years** and exceeded by nine. — Saheeh International ***SEE DIAGRAM FOR UNDERSTANDING***	
	What is the effect of spacetime curvature on light?	Light follows curved paths due to space time curvature. ***(Schneider et al., 1992; Carroll, 2004).[34][20]***	**BOTH AGREE WITH THIS** The Quran describes light bending very clearly in this verse. (18:17)		https://quran.com/18?startingVerse=17 https://quran.com/18?startingVerse=25
		Key Takeaway - We can visualize space time curvature by bending of light due to space time curvature of Gravity Pit/Well. And the light will follow curved path.		**Key Takeaway - We can visualize space time curvature by bending of light due to space time curvature of Gravity Pit/Well. And the light will follow curved path.**	
14	**Is time dilation proven experimentally?**	**YES**	***(Hafele & Keating, 1972) [53]***	**YES**	

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7. CONCLUSION AND WHY THE HISTORY OF SCIENCE MUST BE REWRITTEN

7.1. SUMMARY OF FINDINGS

Through a detailed analysis of Surah Al-Kahf and other Quranic verses, this paper has demonstrated that the Quran describes Spacetime curvature, gravitational time dilation, wormholes, and relativistic effects very clearly centuries before modern science formally discovered them. The key findings are:

- **Kahf (The Cave) is not just a physical location but a space-time gravity well where time dilation occurs (18:17, 18:25). [7][9]**
- **The Junction of Two Seas (18:60-18:63) aligns with a wormhole connection between two regions, explaining time-reversal effects (Surah Al-Kahf, 18:60-18:63)[10].**
- **Dhul-Qarnayn's journey (18:86, 18:90) describes a black hole event horizon and a potential wormhole exit (Surah Al-Kahf, 18:86, 18:90)[11][12].**
- **Other Quranic verses reference space-time distortions, including but not limited to the concept of Hell as a wormhole (25:11-14), the stable shadow due to gravitational lensing (25:45), and instantaneous travel (27:38-40). (Surah Al-Furqan, 25:11-14) etc. [13]**

These descriptions, when analyzed scientifically, **align perfectly with modern physics principles such as General Relativity, black holes, and Einstein-Rosen bridges** (wormholes), especially after understanding of **Quran 18:17**.

7.2. WHY THE HISTORY OF SCIENCE MUST BE REWRITTEN

For centuries, modern science has credited **Western scientists** such as **Einstein, Hawking, and Penrose** with the discovery of relativity, space-time curvature, and wormholes. However, **the Quran presented these concepts over 1,400 years ago**.

7.2.1. THE EUROCENTRIC NARRATIVE OF SCIENCE

- The **Scientific Revolution** is often portrayed as a **purely Western achievement**, ignoring earlier **Islamic contributions**.
- **Scholars like Al-Biruni and Ibn Sina (Avicenna)** explored **relativity-based ideas** centuries before Einstein.
- The **Quran describes space-time warping, light bending, and gravitational effects using simple, direct language.**

7.2.2. QURANIC CONCEPTS PRECEDING MODERN SCIENCE

The Quran **challenges conventional scientific history** by describing relativity-based phenomena that match modern physics.

Quranic Concept	**Scientific Principle**	**Supporting Verse**
Time dilation in the cave	Gravitational time dilation	18:17, 18:25

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Quranic Concept	Scientific Principle	Supporting Verse
Meeting of two seas	Wormholes and space-time shortcuts	18:60-63
Setting of the sun in murky water	Black hole event horizon/Singularity	18:86
Rapid travel of Dhul-Qarnayn	Faster-than-light travel (wormholes)	18:86, 18:90
Hell's perception of people before they arrive	Time loops in wormholes	25:11-14
Stable shadows	Gravitational lensing	25:45
Uzair's time distortion	Time dilation effect	2:259
Instantaneous travel of Sheba's throne etc.	Wormhole-based teleportation	27:38-40

These examples **prove that the Quran contained highly advanced physical descriptions**—many of which were **only formally developed in the 20th century**.

7.3. FUTURE IMPLICATIONS: INTERDISCIPLINARY STUDY BETWEEN QURAN AND SCIENCE

The findings of this study open the door for **further interdisciplinary research**, where **physics, cosmology, and Quranic exegesis** can be combined to develop a **new understanding of space-time and the universe**.

7.3.1. CHALLENGES TO THE SCIENTIFIC COMMUNITY

- **How can a 1,400-year-old text describe relativity-based phenomena with such precision?**
- **Should the Quran be studied as a source of scientific knowledge?**
- **Does the Quran provide additional insights into undiscovered cosmic phenomena?**

These questions demand a **reassessment of how science and religion are viewed**—not as opposing forces, but as **interconnected fields of knowledge.**

We should use Quran and **acknowledge its role in advancing our understanding of the universe**. T**he historical narrative should be rewritten to include Quranic insights in the development of modern physics.**

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