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Professional Research Thesis

Titled

The influence of cosmic energy and the golden ratio on nature and its relationship to architecture and interior design.

Researcher

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Supervisor signature

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Dedication

I dedicate this message to the dearest people in my life, my wife and my beloved daughter. Without a doubt, you have been the tremendous support and perseverance that encouraged me to continue my higher education and enter the world of scientific research.

I present this message in the spirit of gratitude and profound appreciation to you both. Your significant role in my life is the true motivation behind my current success. I will do my utmost to preserve this valuable legacy and to always be a role model in your lives. I love you with all the strength I possess and thank you for your unwavering support and love.

Thanks, and appreciation

Allah, the Almighty, says in His Glorious Book, {And whoever gives thanks, he only gives thanks for the benefit of himself} (Surah Luqman, Verse 12).

I praise Allah, Exalted and Glorious, with abundant and beautiful praise that fills the heavens and the earth. I thank Him first and foremost for granting me the completion of this study, and I hope that it will benefit me in my religion and my worldly affairs, and that I may attain His pleasure through it.

All gratitude and appreciation goes to my professors responsible for my thesis, who have been and continue to be my primary support after Allah, Exalted and Glorious. Without them, I would not have reached this level of knowledge and awareness, and I would not have completed this work.

SUMMARY

Energy is closely related to humans; it is the primary driving force behind life. Without energy, human life ceases to exist. There are many sources of energy that sustain individuals and assist them in performing their vital functions. Among these is a subtle type of energy that flows through seven centers associated with various physical organs, known as chakras.

Cosmic energy science studies the relationships among all elements of the universe and life, as well as the impact of these relationships on the quality of life we experience and how to continuously improve that quality. This science adopts a holistic perspective on life, often referred to as the science of the future. It utilizes shapes, colors, movement, and sound to bring balance to all levels of energy, which is central to interior design due to its deep integration into life.

Cosmic energy science views architecture and interior design as a language for shaping the spaces used by humans, whether for living, working, healing, or other purposes. Just as the quality of a space is influenced by the air quality, it is also affected by the shapes and angles present in the design. This science is concerned with the effects of shapes and geometric angles on human vital energy and offers solutions to mitigate negative effects while enhancing positive ones. Thus, it provides insights into how to eliminate architectural pollution that we suffer from.

Here, the golden ratio in architecture plays a crucial role in achieving optimal results for an ideal spatial energy. It is important to distinguish between cosmic energy and the golden ratio as energy; cosmic energy seeks to decode the energy present in nature and is based on the possibility

of resonance in architectural forms. Therefore, there must be harmony among colors, shapes, and movements to generate energy that can be harnessed in design to positively affect humans.

Cosmic energy is the design language of energy and form that explains and utilizes the functional relationship between energy and form to restore balance and harmony between internal and external environments.

The study Problem.

Cosmic energy and the golden ratio are natural phenomena that have profound and complex effects on various fields, including architecture and interior design. Reflecting on the golden ratio, defined as a mathematical relationship between two parts such that the ratio of the larger part to the whole is equal to the ratio of the smaller part to the larger part, reveals its close connection to the aesthetics and harmony of nature. This ratio is frequently found in various elements of nature, from leaf formations and seashells to the structures of galaxies. It embodies a balance and beauty observable in the diverse aspects of natural life.

Cosmic energy, on the other hand, is the vital force believed to be connected to the balance and processes of life in the universe. This concept is reflected in traditional architecture and in design philosophies that seek to create balanced environments that enhance feelings of inner peace and psychological comfort.

The problem of the study lies in understanding how these natural elements—cosmic energy and the golden ratio—interact with the principles of architecture and interior design. How can these concepts guide the design of architectural spaces and the formation of interior environments to enhance innate aesthetics and natural balance? Can these principles be employed to design spaces that contribute to the enhancement of psychological comfort and well-being for individuals?

Consequently, this study aims to explore the relationship between cosmic energy and the golden ratio in nature and how this relationship reflects on architectural and interior design principles, focusing on the practical

application of these concepts to create more harmonious and beautiful spaces.

The importance of studying:

The importance of this study stems from the urgent need to understand the relationship between fundamental natural concepts, such as cosmic energy and the golden ratio, and their profound impacts on architecture and interior design. In our contemporary world, where the significance of creating living environments that enhance quality of life and promote human well-being is increasing, the study of how these natural concepts influence space design becomes vital.

Investigating how cosmic energy and the golden ratio interact with interior design and architecture opens new horizons for a deeper understanding of how to create spaces that resonate with balance and beauty, contributing to the improvement of individuals' mental and physical health. By employing these principles, architects and interior designers can develop design strategies that enhance sustainability and natural aesthetics in the spaces they create.

Moreover, the study contributes to the revival and development of traditional architectural understanding, which heavily relied on concepts of energy and natural balance. This research is not limited to theoretical aspects; it extends to providing practical applications that help design more harmonious spaces, thereby creating a unique living experience that reflects natural beauty and enhances the connection with the universe and nature. In this way, the study can bring about a fundamental change in how we understand and apply design principles, laying the groundwork for a future more in harmony with the natural world.

Objectives of the study:

- *Explore the impact of cosmic energy on architectural and interior space design.*
- *Analyze the role of the golden ratio in achieving balance and beauty in design.*
- *Provide practical strategies for employing cosmic energy and the golden ratio in interior design and architecture.*
- *Evaluate the effect of applying these concepts on enhancing psychological comfort and well-being in living environments.*
- *Enhance the scientific and intellectual understanding of design principles derived from natural phenomena.*

Study hypotheses and questions.

- *Interior design addresses the psychological and emotional state, as well as the awareness of the user, as one of the determinants of the design process.*
- *Employing the principles of cosmic energy in the design of architectural and interior spaces enhances feelings of psychological comfort and internal balance.*
- *Using the golden ratio in the design of buildings and interior spaces creates harmonious and beautiful environments that reflect natural beauty.*
- *Combining cosmic energy and the golden ratio in design results in more balanced and comfortable living environments.*

Research Questions:

- *How does cosmic energy influence the design of architectural and interior spaces?*
- *What is the role of the golden ratio in achieving balance and beauty in interior design and architecture?*
- *How can the concepts of cosmic energy and the golden ratio be effectively integrated into interior design?*
- *What is the impact of applying these natural principles on the mental health and overall well-being of individuals in designed environments?*
- *Can these principles contribute to the development of more sustainable design strategies that are in harmony with nature?*

Study Approach.

The descriptive analytical method was used to explore the "impact of cosmic energy and the golden ratio in nature and their relationship to architecture and interior design."

The limits of the study:

Spatial boundaries: The Arab world

Time limits: 2001-2024

Study plan.

The study plan will be organized as follows, consisting of several chapters, sections, and a conclusion:

Chapter One: Theoretical Framework and Scientific Concepts

Section One: The Concept of Cosmic Energy and Its Manifestations in Nature

- 1. Definition of cosmic energy and its types*
- 2. Manifestations of cosmic energy in the universe and nature*
- 3. The impact of cosmic energy on living beings and the environment*

Section Two: The Golden Ratio and Its Appearance in Nature

- 1. Definition of the golden ratio and its mathematical properties*
- 2. Examples of the golden ratio in plants and animals*
- 3. The golden ratio in celestial bodies and natural phenomena*

Chapter Two: Applications of Cosmic Energy and the Golden Ratio in Architecture and Interior Design

Section One: The Role of Cosmic Energy in Interior Design

- 1. Cosmic energy and interior design*
- 2. Design principles and coordination according to the golden ratio*

Section Two: Employing Cosmic Energy in Architecture and Interior Design

- 1. Principles of architecture compatible with cosmic energy*
- 2. Designing interior spaces to improve energy flow*
- 3. Using materials and colors to enhance positive energy*

Chapter One: The Theoretical Framework and Scientific Concepts

Section One: The Concept of Cosmic Energy and Its Manifestations in Nature

1. Definition of Cosmic Energy and Its Types in Detailed Paragraphs

Cosmic energy is the fundamental force that permeates the entire universe and connects all its parts together. It is believed to be the primary source of all other forms of energy and serves as the foundation upon which all existence rests. This concept transcends traditional scientific definitions of energy, encompassing spiritual and philosophical dimensions in addition to physical aspects.

In modern physics, cosmic energy can be understood through string theory and the idea of dark energy. String theory suggests that the universe is made up of tiny, vibrating strings, and these vibrations are the basis of all matter and energy. Dark energy, on the other hand, is a hypothetical form of energy believed to be responsible for the accelerated expansion of the universe.

Cosmic energy manifests in various types and forms, the most prominent of which include:

- ***Electromagnetic Energy:*** *This is the energy resulting from the interaction between electric charges and magnetic fields. It includes visible light, X-rays, ultraviolet rays, and radio waves, playing a vital role in shaping the universe and its interactions.*

- **Nuclear Energy:** *This is the energy stored in the nucleus of an atom. It is released during nuclear fission or fusion processes and serves as the primary energy source for stars, including our Sun.*
- **Gravitational Energy:** *This is the energy resulting from the gravitational force between objects. It plays a pivotal role in shaping the large-scale structure of the universe, from galaxy formation to the movement of planets.*
- **Thermal Energy:** *This is the energy associated with the movement of molecules and atoms. It transfers from hot bodies to cold bodies and affects the state and properties of matter.*
- **Chemical Energy:** *This is the energy stored in the chemical bonds between atoms and molecules. It is released or absorbed during chemical reactions and is essential for biological processes.*
- **Life Energy or "Chi":** *This is a concept from Eastern philosophy that refers to the vital force flowing through all living beings. It is believed to influence health and balance in the body and mind.*
- **Spiritual Energy:** *This concept is associated with religious and spiritual beliefs and refers to a non-material force that affects consciousness and spiritual experiences.*

Understanding these different types of cosmic energy and their interactions helps us recognize the profound interconnectedness of all components of the universe. This understanding has broad applications across multiple fields, including science, philosophy, alternative medicine, and, of course, architecture and interior design. By grasping the nature and behavior of these energies, we can design environments that harmonize with cosmic forces and enhance well-being and balance.

2. Manifestations of Cosmic Energy in the Universe and Nature

Cosmic energy, as the fundamental force that organizes and drives the universe, manifests in various forms throughout the cosmos and nature. These manifestations range from massive cosmic phenomena to subtle interactions at the atomic level. Understanding these manifestations helps us recognize the deep interconnectedness of all components of the universe and how cosmic energy influences every aspect of existence.

Manifestations of Cosmic Energy in Outer Space:

A. Stars and Suns: *Stars are among the most prominent manifestations of cosmic energy in outer space. These massive celestial bodies are, in fact, natural nuclear reactors, converting hydrogen into helium through the process of nuclear fusion. This process releases enormous amounts of energy in the form of light and heat, making stars primary sources of energy in the universe.*

Our Sun, for example, produces energy equivalent to about 386 billion billion megawatts every second. This vast energy not only provides light and heat to our planet but also impacts all aspects of life on Earth, from weather patterns to photosynthesis in plants.

Larger and more massive stars produce more energy and burn faster, leading to a shorter lifespan. In contrast, smaller stars produce less energy but can last much longer. This diversity in energy production and star lifespan plays a critical role in the evolution of galaxies and the universe as a whole.

B. Galaxies: *Galaxies are massive collections of stars, gas, and cosmic dust, representing another manifestation of cosmic energy. Gravitational energy plays a pivotal role in the formation and cohesion of galaxies. At the center of most galaxies lies a supermassive black hole, exerting immense gravitational force that affects the movement of surrounding stars and matter.*

The Milky Way galaxy, for example, contains an estimated 100 billion stars, all orbiting around the galactic center due to gravity. This massive rotational motion is another manifestation of cosmic energy, as gravitational potential energy transforms into kinetic energy on a cosmic scale.

Additionally, galaxies exhibit other phenomena related to cosmic energy, such as cosmic jets emitted from supermassive black holes. These jets are streams of particles and radiation that travel at speeds approaching the speed of light, extending over distances of millions of light-years.

C. Cosmic Rays: *Cosmic rays are high-energy particles that move at speeds close to the speed of light and originate from sources outside our solar system. Composed primarily of protons and nuclei of other atoms, these particles represent another manifestation of cosmic energy at an extreme level.*

Cosmic rays originate from various sources in the universe, including massive stellar explosions (supernovae) and active black holes. When these particles reach the Earth's atmosphere, they interact with air molecules, producing a series of reactions that lead to the formation of secondary particles. This process exemplifies how cosmic energy transforms from one form to another.

D. Gravitational Waves: *Gravitational waves, predicted by Einstein's general theory of relativity and finally detected in 2015, are ripples in the fabric of spacetime itself. These waves are produced by violent cosmic events, such as the merging of black holes or neutron stars.*

Gravitational waves are a unique manifestation of cosmic energy, as they transmit energy and information across the universe without the need for a physical medium. The discovery of these waves has opened a completely new window into our understanding of the universe, allowing us to study cosmic phenomena that were previously invisible.

E. Dark Matter and Dark Energy: *Although we cannot see or measure them directly, dark matter and dark energy together constitute about 95% of the universe's content. These mysterious components represent another manifestation of cosmic energy that we are still trying to comprehend.*

Dark matter, believed to make up about 27% of the universe, is evident through its gravitational effects on visible matter. For example, galaxies rotate at speeds greater than can be explained by the mass of visible matter alone, suggesting the presence of additional unseen mass.

Dark energy, on the other hand, accounts for about 68% of the universe and is thought to be responsible for the accelerated expansion of the universe. This accelerated expansion is a dramatic manifestation of cosmic energy, indicating that there is a force acting against gravity on a cosmic scale.

Manifestations of Cosmic Energy in the Solar System:

A. The Sun and Solar Winds: *The Sun, as the central star of our solar system, is the primary source of cosmic energy in our system. In addition to the light and heat it produces, the Sun also emits a continuous stream of charged particles known as solar winds.*

Solar winds represent another manifestation of cosmic energy in our solar system. These particles, primarily consisting of electrons and protons, are ejected from the Sun's upper atmosphere (the solar corona) at speeds of up to 800 kilometers per second. When these particles collide with the Earth's magnetic field, they produce phenomena such as auroras.

B. The Magnetic Field of Planets: *Many planets in our solar system, including Earth, possess strong magnetic fields. These fields are another manifestation of cosmic energy and arise from the movement of conductive materials within the planets.*

The Earth's magnetic field, for example, plays a vital role in protecting our planet from charged particles coming from the Sun and outer space. This field deflects the path of these particles, preventing most of them from reaching the Earth's surface. This interaction between the magnetic field and charged particles is an example of the transformation of cosmic energy from one form to another.

C. Volcanism and Geological Activity: *Volcanic and seismic activity on planets and moons in our solar system is another manifestation of cosmic energy. On Earth, these phenomena result from the movement of tectonic plates, driven by heat from the planet's interior.*

In the case of distant moons like Io, a moon of Jupiter, volcanic activity is a result of tidal forces generated by Jupiter's gravity. This is an example of how gravitational energy transforms into heat and kinetic energy.

D. Planetary Rings: *Planetary rings, such as those around Saturn, Jupiter, Uranus, and Neptune, represent another manifestation of cosmic energy in our solar system. These rings consist of small particles of ice and rock orbiting the planet due to gravitational forces.*

The motion of these particles in orbits around the planets is an example of the transformation of gravitational potential energy into kinetic energy. Additionally, the complex interactions between the particles in the rings and the small moons of the planets illustrate how cosmic energy can produce intricate patterns and structures in space.

Manifestations of Cosmic Energy on Earth:

A. The Hydrological Cycle: *The hydrological cycle, or water cycle, is a magnificent manifestation of cosmic energy on Earth. This continuous process, which includes the evaporation of water from oceans, rivers, and lakes, its condensation in the atmosphere, and then its precipitation as rain or snow, relies primarily on solar energy.*

Section Two: The Golden Ratio and Its Appearance in Nature

I. Definition of the Golden Ratio: The golden ratio, also known as the divine proportion or golden section, is a unique mathematical ratio that frequently appears in nature, art, and architecture. Mathematically, it is defined as the ratio between two parts of a straight line, such that the ratio of the larger part to the smaller part is equal to the ratio of the whole line to the larger part. This ratio is approximately equal to 1.618033988749895... and is commonly represented by the Greek letter phi (φ).

Mathematical Formulation of the Golden Ratio: Assuming we have a line divided into two parts: the larger part (a) and the smaller part (b), the golden ratio is achieved when:

$$(a+b)/a = a/b = \varphi \quad \frac{(a+b)}{a} = \frac{a}{b} = \varphi \quad a(a+b) = ba = \varphi$$

where φ (phi) is the value of the golden ratio.

Mathematical Properties of the Golden Ratio:

- **Numerical Value:** The numerical value of the golden ratio is an irrational number, meaning it cannot be expressed as a ratio between two integers. Its exact value is:

$$\varphi = \frac{1 + \sqrt{5}}{2} \approx 1.618033988749895... \quad \varphi = \frac{1 + \sqrt{5}}{2} \approx 1.618033988749895... \quad \varphi = \frac{1 + \sqrt{5}}{2} \approx 1.618033988749895...$$

- **Quadratic Equation:** The golden ratio is the positive solution of the quadratic equation:

$$x^2 - x - 1 = 0 \quad x^2 - x - 1 = 0 \quad x^2 - x - 1 = 0$$

This equation arises from the definition of the golden ratio itself.

- **Fibonacci Sequence:** *There is a close relationship between the golden ratio and the Fibonacci sequence. In the Fibonacci sequence, each number is the sum of the two preceding ones (1, 1, 2, 3, 5, 8, 13, 21, ...). When dividing any number in the sequence by the preceding number, the result approaches the golden ratio as we progress through the sequence.*
- **Continued Fractions:** *The golden ratio can be expressed as an infinite continued fraction:*
- $$\varphi = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \dots}}}$$
- *This representation illustrates the self-referential and recursive nature of the golden ratio.*
- **Self-Similarity Property:** *One of the unique properties of the golden ratio is that it remains invariant when 1 is added to it or subtracted from it:*
- $$\varphi^2 = \varphi + 1 \quad \varphi^2 = \varphi + 1 \quad 1/\varphi = \varphi - 1 \quad \frac{1}{\varphi} = \varphi - 1$$
- *This property makes the golden ratio unique in the realm of mathematics.*
- **Golden Rectangle:** *A golden rectangle is a rectangle whose length-to-width ratio equals the golden ratio. If a square is cut from this rectangle, the remaining rectangle will also be a golden rectangle. This process can be repeated indefinitely, creating a spiral pattern reminiscent of a snail shell.*
- **Golden Angle:** *The golden angle measures approximately 137.5 degrees and represents the central angle in a circular sector where the ratio of the circumference to the radius equals the golden ratio.*

This angle appears frequently in the arrangement of plant leaves and flower petals.

- **Relationships with Other Numbers:** *The golden ratio has interesting relationships with other numbers. For example:*
- $e(\pi/5) \approx \varphi e^{\{\pi/5\}} \approx \varphi e(\pi/5) \approx \varphi$
 $\ln(\varphi) \approx 0.481211825059603$, which is the reciprocal of $2\varphi \ln(\varphi)$
 $\approx 0.481211825059603$, which is the reciprocal of 2φ
 $2\varphi \ln(\varphi) \approx 0.481211825059603$, which is the reciprocal of 2φ
- **Geometric Transformations:** *The golden ratio can be generated through several geometric transformations. One well-known example is the construction of a regular pentagon, where the golden ratio appears in the relationships between its various parts.*
- **Aesthetic Properties:** *Although not purely a mathematical property, the golden ratio is considered aesthetically pleasing to the human eye. This is why it has been widely used in art, architecture, and design.*
- *In conclusion, the golden ratio is a unique mathematical concept that combines simplicity in definition with complexity in properties. It appears in a wide range of mathematical and natural contexts, making it an interesting subject across various fields, from pure mathematics to art, design, and natural sciences.*

Conclusion.

The science of cosmic energy studies the relationships between all elements of the universe and life. It uses shapes, colors, movement, and sound to bring balance to all energy levels, incorporating the impact of the golden ratio. This is particularly relevant to interior design, as it intersects with the essence of life; interior design can serve as a catalyst for positive energy by modifying the energy pathways within a space.

This, in turn, influences consciousness and adjusts the user's mood. There are applications of cosmic energy and the golden ratio in interior design and furniture, which possess a significant balance with nature through their emphasis on high aesthetic values. Additionally, specialists in energy sciences have studied these concepts to establish frameworks for design that guide designers focused on the psychological dimensions of users, thereby affecting positive energy and influencing users' moods.

The golden ratio, with its mathematical harmony and aesthetic appeal, has inspired architects and designers to incorporate it into their work, both in historical and contemporary contexts. This research analyzed several renowned buildings, such as the Parthenon, Villa Rotonda, and Villa Savoye. It revealed a range of methods by which architects utilize the golden ratio as a design tool in modern and contemporary architecture, such as in Villa Savoye. The golden ratio is observed to establish proportional relationships, create spatial harmony, and guide the placement of architectural elements. It is also applied in facade compositions to achieve balanced proportions and aesthetic arrangements for windows, doors, and structural elements. Additionally, it is implemented in interior design, particularly in floor plan layouts.

This paper demonstrates that the impact of the golden ratio on architecture extends beyond mere aesthetics; adherence to these mathematical ratios can enhance spatial organization, create a sense of energetic balance, and evoke positive emotional responses from occupants and observers. While architects strive to meet the functional, social, and environmental needs of occupants, the golden ratio should be considered a valuable element in broader design contexts.

The golden ratio remains a source of inspiration, encouraging architects to seek energetic balance in their spaces and elegance in their pursuit of timeless and impactful design. As architectural trends and philosophies evolve, the legacy of the golden ratio continues to shape the built environment, leaving a lasting mark on the world of architecture.

To delve deeper into the application of the golden ratio in interior design, a pressing question arises: To what extent does the golden ratio truly affect spatial energy, human perception, and experience within interior spaces? Further studies could explore how individuals interact with interior designs that feature golden ratio proportions compared to those that do not. By conducting user studies and utilizing advanced techniques to measure physiological responses, researchers can assess whether the presence of the golden ratio influences emotional states, stress levels, and overall comfort. Additionally, cultural differences in preferences for proportions can be investigated, highlighting how various communities respond to designs influenced by this mathematical concept.

By combining empirical evidence with the artistic sensibilities of designers, future studies can provide a deeper understanding of the role the golden ratio plays in shaping human experiences within interior spaces. This

research will enrich the field of interior design and help create environments that resonate with people on both functional and emotional levels.

Results:

- **Understanding Cosmic Energy:** Utilizing cosmic energy requires an understanding of vital energy, human energy, and geometric forms.
- **Addressing the Invisible Dimension:** It's essential to engage with the invisible dimension of our bodies (the surrounding hidden energy) to alleviate health issues, which can assist medicine in treating diseases that can be resolved by directing energy pathways through interior design.
- **Using Shape and the Golden Ratio:** The energy of shape and the golden ratio can be applied in interior design to harness their positive energy. Designers can alter the impact of shapes and their implications based on the intended use.
- **Applications in Interior Design:** There are applications of cosmic energy and the golden ratio in interior design and furniture that are characterized by significant aesthetic and functional values, as well as their ability to modify the user's mood.

Recommendations:

- ***Consideration of New Design Dimensions:*** Interior designers must consider new design dimensions in addition to aesthetic and functional values. They should take into account the health and psychological aspects of users by recognizing their vital signatures and unique body energies.
- ***Knowledge of Modern Sciences:*** Designers should be well-versed in modern sciences alongside specialized fields, particularly those related to interior design and human well-being, including mood and awareness levels within spaces.
- ***Integration in Architectural Education:*** Architecture and interior design schools should emphasize the connection between design studies and human vital energy through student projects, using this understanding to create balanced and harmonious environments for individuals.

The reviewer:

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