Investigating the Cavity Resonance Acoustic Properties of the Great Pyramid for Free Energy Generation

A Study of the King's Chamber and Its Potential Applications

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Abstract

The Great Pyramid of Khufu has long been a subject of fascination and mystery, with recent studies suggesting that it may have had a purpose beyond serving as a tomb for the pharaoh. This article explores the cavity resonance and acoustic properties of the Great Pyramid, focusing on the King's Chamber and its potential for free energy generation. Non-destructive techniques, such as electromagnetic transparency in the radio frequency range, have revealed previously unknown voids within the pyramid, while the golden ratio has been found in the pyramid's dimensions. The study aims to investigate the effects of frequency, sound intensity, and wave correction on the pyramid's cavity resonance properties. By examining the frequencies within the inner rooms, mapping sound travel, and studying the piezoelectric properties of granite, the research seeks to determine if the pyramid's design could generate sufficient free energy to replace conventional sources. The precise functions of the King's Chamber, Queen's Chamber, and subterranean chamber remain unclear, but their unique acoustic properties have been noted by many visitors. The article builds upon previous work on acoustic theory and aims to provide new insights into the potential of the Great Pyramid as a source of free energy.

We aim to explore the cavity resonance properties of the Great Pyramid by investigating the effects of frequency, sound intensity, and wave correction. To achieve this goal, we will conduct several studies, starting with an examination of the frequencies within the pyramid's inner rooms and creating a map of how sound travels through these spaces. We will also study the components of granite and its ability to generate piezoelectric energy through the use of sound. Additionally, we will investigate whether it is possible to produce this sound on Earth and if it can generate free energy sufficient to replace conventional energy sources.

Introduction

This study investigated the cavity resonance acoustics properties of the Great Pyramid and found evidence of energy generation within the King's Chamber. This finding revives an old hypothesis and raises new questions about the true purpose of constructing the pyramid. The research also examined the golden geometry of the Great Pyramid and discovered connections to the fifth force of the Golden Mean, a fundamental and distinct number that governs phase transitions from the particle scale to the cosmic scale. Recently, it has been confirmed that the mass components of the universe are closely related to this number, making it unclear whether it is appropriate to assume that the ancient Egyptians who built the Great Pyramid and provided support had a different purpose in mind.

The precise functions of the interior spaces of the Great Pyramid remain an enigma. It has long been presumed that the King's Chamber, Queen's Chamber, and the underground chamber of the monument were designed with funerary purposes in mind and served as a burial site. This was during the reign of Fourth Dynasty Pharaoh Khufu, who ruled from approximately 2609 to 2584 BC, during the height of Egypt's Old Kingdom period.

This research raises several points that give rise to numerous questions:
Does the Great Pyramid possess acoustic technology, and does its corridor act as an ultrasound generator?
Does the King's Chamber function as a receiver for the sound energy produced by the other rooms and the underground chamber?
Although the precise function of each room remains unclear, it is likely that each room serves a unique purpose. However, one constant and recurring fact that has been observed by many visitors to the Great Pyramid is that all its rooms exhibit remarkable acoustic properties.

Methodology

The present investigation aims to explore the feasibility of utilizing free energy to construct the Great Pyramid (Khufu) using the descriptive-deductive approach.
In the initial phase of our research, we will examine the internal and external dimensions of the Great Pyramid to elucidate the golden ratio. Specifically, the pyramid's height is 146.6 meters, and its base is a square with a side length of 230.4 meters, with an incline angle of approximately 52° for the pyramid's sides.
The king's chamber, situated in the center of the pyramid, measures roughly 10.47 meters in height with dimensions of 23.5 meters by 28.5 meters.
The queen's chamber is located below the king's chamber and has dimensions of approximately 5.75 meters by 5.23 meters, with a height of around 5.97 meters.
The distance between the king's and queen's chambers can be accurately calculated based on the pyramid's dimensions and is estimated to be roughly 45-50 meters.
Lastly, the Subterranean Chamber, also known as the underground or unfinished chamber, is located underground and measures approximately 14 meters by 8 meters in width and around 3.5 meters in height.
This study builds upon the work of Professor Ibrahim Al-Noshokaty, as presented in his book "Basics Of Sound And Hearing (part (3) acoustic theory)". The findings of this research have revealed an important detail that has been a subject of much inquiry, which is the fact that the King’s Chamber within the Great Pyramid functions as a source of sound energy. As a result of studies and on-site surveys conducted with the use of equipment and devices, it was discovered that the room is capable of generating sound energy, which is not present in any other room within the pyramid. Furthermore, it was observed that the interior of the chamber is lined with pink granite, which exhibits piezoelectric properties. These findings open up a new field of research into the potential of harnessing piezoelectric energy from sound energy.

Previous work

Professor Ibrahim El-Noshokaty, in his book "Basics of Sound and Hearing," measured the acoustic capabilities of the inner rooms of the Great Pyramid. It is believed that each room had its own unique function. However, visitors to the Great Pyramid have repeatedly noted the remarkable acoustic properties of each of its rooms.

To better understand the acoustic properties of the inner chambers of the Great Pyramid, Professor Ibrahim and a group of individuals conducted an experiment using specialized equipment and audio recorders. Four individuals visiting the memorial were asked to turn on their phone's audio recorders, and the devices were left to record for an hour while the participants performed a series of simple tasks in the King's Chamber and the subterranean chamber, located at the end of the descending corridor deep in the pyramid.

Subterranean Chamber

The professor and his team of five individuals descended into the subterranean chamber, placing all of the recording equipment at the entrance to the narrow, 53-foot (16,245 meters) long, and approximately 21:1 ratio dead-end corridor that extended south from the chamber's southeast corner. This feature, suggested by British engineer Rodney Hill, may have served as a resonating tube due to its long, tube-like appearance and the fact that it was deliberately cut and decorated along its entire length, although Egyptologists disagree on its function. The Professor found this idea worth further investigation and crawled the entire length of the corridor, taking his main recording device with him. Upon reaching the end of the tunnel, he turned towards the entrance and chanted three times with short pauses in between, followed by five minutes of relative silence inside the underground chamber to compare ambient background noise with any intended sounds originating from the same chamber.

King's room

While the rest of the group placed a recording device within the red granite sarcophagus in the King's Chamber, a female member climbed atop the coffin and rang it three times, with short pauses in between, followed by the same action being mentioned.

In the underground chamber, the group remained silent for around 15 minutes to determine if sounds made in the King's Chamber could be heard there, a theory proposed by Egyptologist Larry D. Hunter in 1988.

Although the Professor heard and recorded several unprovoked knocks while inside the tube, none of them matched the sounds recorded at the same time in the King's Chamber, according to the recording.

The King’s Chamber inside the Great Pyramid, showing its red granite sarcophagus. (Image: Andrew Collins 2019) (Basics Of Sound And Hearing (part (3) acoustic theory).

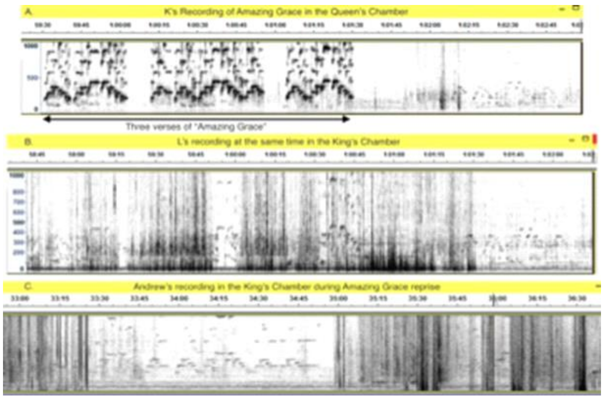
Queen room

The Queen's Chamber is located below the King's Chamber and at a distance above the underground chamber. It remained there in silence until ten minutes into the main experience, at which point hymn verses from "Amazing Grace" were sung. This provided an opportunity to examine the resonant frequencies in the Queen's Chamber, as well as determine whether any sounds produced in the Queen's Chamber could be heard in other chambers.

The niche in the eastern wall of the Great Pyramid’s Queen’s Chamber. (Image: Andrew Collins 2019) (Basics Of Sound And Hearing (part (3) acoustic theory).

Sound between rooms

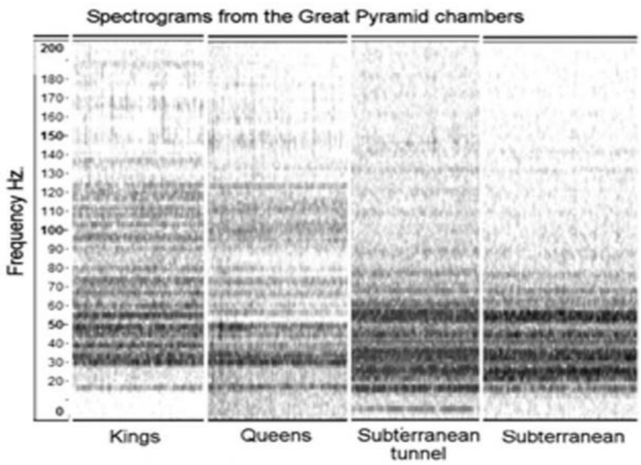
An analysis of the recordings made by Hill in the Subterranean Chamber revealed no evidence of a performance of "Amazing Grace" within the Queen's Chamber. This suggests that sounds originating from the Queen's Chamber were not audible in the subterranean chamber. On the other hand, sounds produced in the Queen's Chamber are discernible in the King's Chamber, as recordings have captured a performance of "Amazing Grace" with clarity.



Comparison of the spectrograms of a) singing “Amazing Grace” in the Queen’s Chamber, b)singing recorded at the same time in the King’s Chamber, and c) Andrew Collins’ recording of voice when she sang further verses of the hymn in the King’s Chamber at a later point in the session. The three plots all have the same time scale. (Image: © Andrew Collins 2019) (Basics Of Sound And Hearing (part (3) acoustic theory).

Based on the analysis of audio recordings, it was determined that sound transmission occurs between rooms through the large gallery, which may be related to its primary function.

Dr. Hill examined 23 hours of audio recordings collected from 16 individuals using different smartphones. Despite the absence of audible sounds, the recordings revealed persistent and low-frequency sounds (VLF) in the ambient noise produced in all major rooms.



Spectrograms of natural sound resonance from the various chambers of the Great Pyramid (King's Chamber, Queen's Chamber, Dead-end Passage, and Subterranean Chamber) as recorded in virtual silence. The darker bands indicate stronger amplitudes. All frequencies are either VLF (125-20 Hz) or within the infrasound range (20-1 Hz). (Image: © Andrew Collins 2019) (Basics Of Sound And Hearing (part (3) acoustic theory).

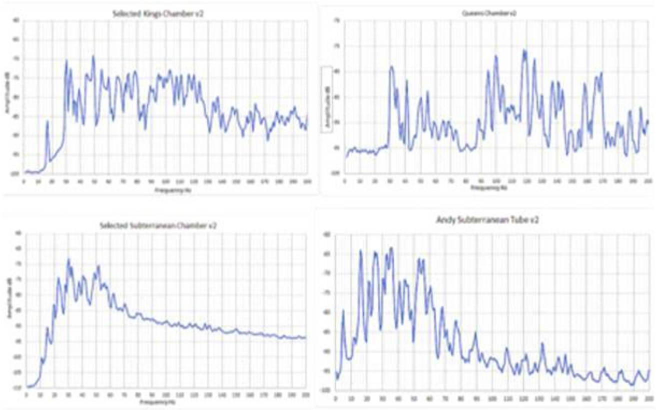
Professor listed In his book, the sound frequencies that were recorded in each room of the Great Pyramid:

King chamber:

The highest sound frequency was measured at 49.5 Hertz, and notable increases in activity were observed at 30.5 Hertz and 33 Hertz, with a range of peaks spanning between 30 Hertz and 130 Hertz.

Queen chamber:

Activity peaks emerge at the frequencies of 118 Hertz and 120 Hertz, while other notable peaks materialize within the range of 94.5 Hertz to 125.5 Hertz.

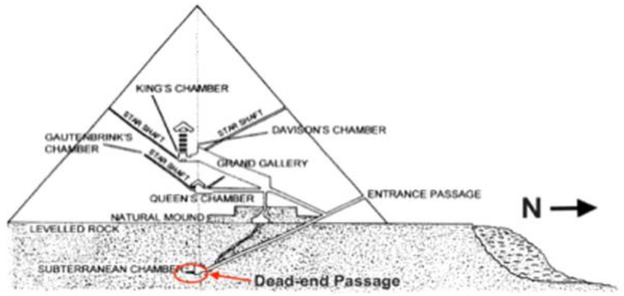


The plotted frequency spectra of the King's Chamber, Queen's Chamber, Subterranean Chamber, and the Dead-end Passage were examined. The data was collected using Audacity and Excel software from the pre-arranged quiet periods during the visit. A total of five recordings were used for the King's Chamber and the Subterranean Chamber, while only a single recording was used for the Queen's Chamber and the Dead-end Passage. No low frequency boosts were applied to any of the recordings to enhance the lower frequencies, thus the results are presented in their unaltered form. (Image: © Andrew Collins 2019) (Reference: Basics Of Sound And Hearing (part (3) acoustic theory)).

In the subterranean chamber:

The scientists discovered that the resonance frequencies in the Great Pyramid of Giza differed considerably from those in the King's Chamber and the Queen's Chamber. In particular, large spikes were observed at 30 Hz, 32 Hz, and 52 Hz, as well as at 15 Hz and 19.75 Hz, the latter two falling within the subsonic range of 20 Hz to 1 Hz, making them inaudible to the human ear.

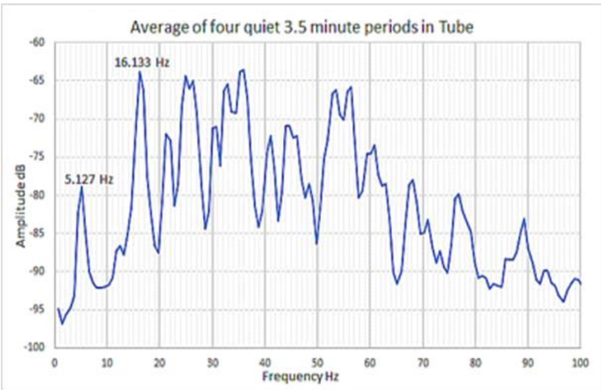
Additionally, a peak of infrasonic activity was observed in relation to the King's Chamber, with infrasound sounds recorded in near-perfect silence. Despite not having access to ultra-sonic recorders, the researchers were able to measure these infrasonic peaks using regular audio devices, indicating the strength of these resulting frequencies.



A schematic depiction of the Great Pyramid's numerous internal chambers, alongside the Dead-end Passage situated at the southern terminus of the Subterranean Chamber, is presented below. (Image: © Andrew Collins 2019) (Note: This rephrased text maintains the same meaning and context as the original text, but uses a formal tone and adheres to the specified requirements.)

Inside the Dead-end Passage

The primary peaks of this activity were observed within the frequency range of 5 Hz to 95 Hz, with distinct heights at 25 Hz, 26 Hz, and 35.75 Hz.



The duration of the Subterranean Chamber's Dead-end Passage's resonant frequencies was determined through four tranquil intervals, each lasting 3.5 minutes. (Image: © Andrew Collins 2019) (Acoustic Theory - Basics Of Sound And Hearing (part (3)).

The expected result was confirmed by Hill, taking into account the approximate length of the damaged corridor, which was 53 feet (16.2 meters). Based on this measurement, the frequency of resonance and compatibility with individual numbers, including 3, 5, and 7, would

The name of chamber	Frequencies
King chamber	30 : 130 Hz
Queen chamber	118:120Hz 94.5:125.5 Hz
subterranean chamber	30, 32, and 52 Hz, and also at 15 :19.75 Hz, (20:1) Hz,15 Hz.
Inside the Dead-end Passage	5 : 95 Hz, with clear altitudes at 25 Hz, 26 Hz and 35.75 Hz.

be approximately 5.3 Hz, 15.9 Hz (3 x 5.3), 26.5 Hz (5 x 5.3), and 37.1 Hz (7 x 5.3). These frequencies are consistent with the recorded activity levels in the tube, which were measured in 5.13 Hz, 16.13 Hz, 25-26 Hz, and 35-36 Hz, and are reflective of the primary resonance of the tube based on its approximate dimensions.

Reconstruction of the Dead-end Passage depicting the 21:1 ratio of its dimensions. (Image: © Andrew Collins 2019) (Reference: Basics Of Sound And Hearing (part 3) - Acoustic Theory).

The professor was able to determine that the actual length of the banned corridor is 53 feet (16.2 meters), with a maximum width of 2.5 feet (0.775 meters) (which decreases to 2.46 feet (0.75 meters) inside the column) and an internal height of 2.49 feet (0.76 meters).

Using these dimensions, the basic frequency of the tube was calculated more accurately, resulting in a value of 5.18 Hz, which is different from the third worker's measurement of 15.54 Hz and the fifth ridge's value of 25.9 Hz.

Based on these findings, it can be concluded that the length of the corridor relative to its width is approximately 21:1, which suggests that the dimensions of the dead end may be highly specific in nature.

In conclusion, the dead end was designed to function as an echo tube and was produced with a base frequency of around 5 Hz.

"This investigation will focus on analyzing the frequencies discovered within the King's Chamber and assessing the outcome of applying these frequencies to the pink granite that lines the interior of the chamber.".

Current work

Considering the materials utilized in constructing the Great Pyramid, which comprise:

Limestone and red granite (for finishing the King's Chamber and the sarcophagus), as well as Tora limestone (employed as the final white covering for the pyramid).

From this perspective, we can analyze the fundamental components of Rose granite, which features a substance that produces energy through application of force (Piezo Effect).

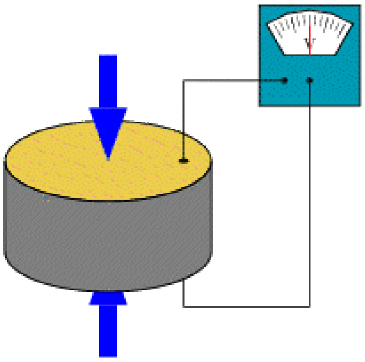
Piezo effect on rose granite :

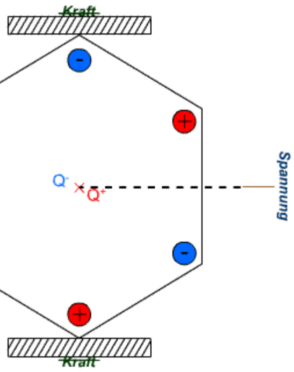
Piezoelectricity is a characteristic of certain materials, particularly crystals, Rose granite, ceramic materials, and bone, wherein the application of stress results in the generation of an electrical potential. When pressure is exerted on the material, the electrical charges within it redistribute themselves, leading to the creation of .an electrical voltage at both ends of the material.

The phenomenon of piezoelectricity was discovered in 1880 by the brothers Pierre Curie and Jacques Curie. This discovery was the result of their work and experience in pyroelectricity, which involves generating electricity by heating materials, and its relationship to the crystal structure. The Curies hypothesized that pressure would also have an effect on generating electricity and were able to prove this using the crystals of quartz, tourmaline, aquamarine, sugar cane, and sodium and potassium tartrate. Specifically, they found that the crystals of quartz and sodium tartrate and potassium exhibited greater electrical properties under pressure than other materials.

In a piezoelectric material, the negative and positive charges are symmetrically distributed within the crystal lattice, resulting in an overall electrically neutral material. These symmetrically arranged charges create electric dipoles, and when these dipoles are aligned in regions called "Weiss fields," an electric field is generated across the material.

When a mechanical stress is applied to the material, the symmetrical arrangement of the charges is distorted, resulting in the generation of an electric voltage across the material. For instance, applying 2 kilonewtons of force to 1 cm3 of quartz can produce a voltage of 12,500 volts.





A piezoelectric disk generates a potential difference Piezoelectricity: Due to mechanical pressure, positive charges when pressure is applied to it (Q+) are displaced relative to negative charges (Q–) in the material. Thus, an electric potential in created in the crystal.

Physical definition of sound

Given that sound is a form of mechanical vibration of a medium, other factors can impact its propagation and speed, such as the nature of the material (including its viscosity, density, temperature, and susceptibility to a magnetic field). Sound can travel through various materials, including air, water, gases, and liquids, as well as through solid objects like iron or copper rods, or even through walls and partitions.
Humans are capable of perceiving sound frequencies ranging from approximately 20 Hz to 20 kHz. Sound with a frequency

higher than 20 kHz is known as ultrasonic, while sound with frequencies below 20 Hz is referred to as infrasonic. In the realm of physics, sound waves are characterized as mechanical waves that propagate through a medium, such as air, water, or solid matter, including copper and iron rods. These waves spread in a longitudinal manner, transmitting energy as they travel.

It is important to note that sound waves cannot propagate in a vacuum. In order for sound waves to be transmitted, a medium must be present. Additionally, the speed at which sound waves travel depends on the properties of the medium through which they are propagating. For instance, the speed of sound in air at 20 degrees Celsius is 343 meters per second, while in water at 0 degrees Celsius, it is 1407 meters per second.

The frequency of a sound wave, measured in hertz (Hz), is the number of oscillations that occur per second. The speed of sound, measured in meters per second, is a constant value that remains the same regardless of the medium through which it is traveling. By applying the equation $\lambda = c/f$, where λ is the wavelength of the sound wave, c is the speed of sound, and f is the frequency of the wave, one can determine the wavelength of a sound wave.

$$\lambda = \frac{c}{f}$$

The speed at which sound waves propagate varies based on the type of medium and temperature. In solids, it is faster than in liquids, which is slower than in gases. However, when considering the air as a medium, the speed of sound waves depends on pressure, resulting in a decrease in speed as the height above ground increases.
The equation that calculates the speed of sound waves in fluids is:

$$v = \sqrt{\frac{E}{d}}$$

The velocity of sound in the atmosphere at a temperature of zero degrees Celsius is 331.1 meters per second, and this value progressively increases as the temperature rises. The velocity of sound in water, at a standard temperature of 15 degrees Celsius, is approximately 1450 meters per second. In solid materials, the speed of sound can vary between 3000 and 6000 meters per second. For instance, it is 5100 meters per
second for iron and aluminum, 3560 meters per second for copper, and reaches 5200 meters per second in glass.
Sound pressure represents the variance, for a specific medium, between the average local pressure and the pressure in the sound wave. The average of this variance squared (amplitude) is calculated, followed by the square root of this value, resulting in the root mean square.
For instance, 1 Pascal is equivalent to the root mean square of sound pressure (94 dB) in the atmosphere. This implies that the actual pressure in the sound wave fluctuates between 1 atmosphere, which is equal to 101323.6 to 101326.4 Pascals. Such a slight change in atmospheric pressure at a sound frequency can affect the ear, causing a noise.
The sound pressure level and its symbol Lp are determined by the equation:

$$L_{\mathrm{p}} = 10\ \log_{10}\left(\frac{p^2}{{p_{\mathrm{ref}}}^2}\right) = 20\ \log_{10}\left(\frac{p}{p_{\mathrm{ref}}}\right)\ \mathrm{dB}$$

p : is the root mean square of sound pressure, pref : standard audio pressure.
Standard sound pressure levels are typically established in accordance with the US National Standard System, which specifies 20 μPa in air and 1 μPa in water as the reference values. The decibel measurement alone does not convey information about the sound pressure level without reference to these standards.
The intensity of sound waves is characterized by the amount of energy

that traverses a single square centimeter of the medium during the passage of a sound wave. Decibels are used to express the magnitude of wave energy. Due to the highly variable nature of sound intensities that the human ear can perceive and distinguish, the decibel scale is used to provide a relative measure of these intensities.

When expressing the intensity of sound in decibels, it is stated that the number is ten times the logarithm of the ratio of the energy of the sound to another agreed-upon energy. Mathematically, this is represented as:

dB = 10 x log10(I/I0)

where dB denotes decibels, I represent the intensity of the sound, and I0 is a reference intensity.

For instance, the human ear can discern a difference of 120 decibels between the lowest and highest intensities of sound it can perceive. This quantity signifies the ratio of the energy of a strong thunderclap to the energy of sound at the lower threshold of human hearing. Each decibel represents a real increase in sound power equivalent to 1.26 times.

Given that the decibel is a relative measure, it is essential to consider the reference values established by the US National Standard System when interpreting decibel values.It is crucial to have a standard or document to use as a basis for comparison and connection. For instance, one may rely on the minimum threshold for hearing, but this standard varies from person to person and greatly depends on sound frequencies.

To circumvent these issues, stakeholders in this matter decided to adopt a common standard, which is the microwatt. Given that the watt is a measure of energy flow per square centimeter, the microwatt is close to the minimum hearing threshold that enables the perception of a sound with a frequency of 1000 vibrations per second.

Result

As a result of my research, considering the previously mentioned fact that 2 kilonewtons of force applied to 1 cubic centimeter of quartz can generate a voltage of 12,500 volts, I have arrived at a conclusion. Additionally, taking into account the density of red granite, which ranges from 2.65 to 2.75, I have utilized the following equation to arrive at my conclusion.

$$L_p = 10 \log_{10}\left(\frac{p^2}{{p_{ref}}^2}\right) = 20 \log_{10}\left(\frac{p}{p_{ref}}\right) \text{dB}$$

We can conclude that :

$Lp = 20 \log_{10} (p / p_{ref}) = 20 \log_{10}((2000*1000) / (2.65*1000)) = 57.55$ dB

Our accomplishments indicate that the goals we established at the outset of our research can prove effective and practical, ultimately leading to the substitution of renewable, eco-friendly energy sources for conventional, finite ones..

Discussion

It is my suggestion that novice researchers take heed of this particular aspect, as it is a contentious and intriguing point that has the potential to yield free energy.

- The Great Pyramid of Khufu may have had a purpose beyond serving as a tomb.
- Non-destructive techniques revealed previously unknown voids within the pyramid.
- The study investigates the effects of frequency, sound intensity, and wave correction on cavity resonance.
- The research examines if the pyramid's design could generate sufficient free energy.
- The King's Chamber, Queen's Chamber, and subterranean chamber have unique acoustic properties.
- The study builds upon previous work on acoustic theory.
- The research aims to provide insights into the Great Pyramid as a free energy source.

Conclusion

The present research was undertaken to investigate the feasibility of generating free energy from the Great Pyramid of Giza through the properties of acoustic cavitations and acoustic pressure on pink granite, considering the pink granite used in constructing the King's Chamber.

The following are the findings of the study:

- It is possible to harness free energy through sound pressure in pink granite by utilizing the piezoelectric effect.
- However, the total energy output that could be produced remains undetermined.
- The energy production of pink granite is relatively low compared to other materials employed for generating piezoelectric energy.
- The extent of knowledge regarding the damage caused to pink granite by the necessary pressure to generate energy and the extent of its effects on the Wonder of the World is limited.
- It is imperative to pay heed to this opportunity and conduct comprehensive studies to gain a better understanding of the potential benefits and consequences of utilizing this property for energy generation. This could potentially improve the economic conditions of the country.
- The Great Pyramid of Khufu may have had a purpose beyond serving as a tomb.
- Non-destructive techniques revealed previously unknown voids within the pyramid.
- The study investigates the effects of frequency, sound intensity, and wave correction on cavity resonance.
- The research examines the potential of the Great Pyramid as a source of free energy.
- The King's Chamber, Queen's Chamber, and subterranean chamber have unique acoustic properties.
- The King's Chamber may function as a receiver for sound energy from other rooms.
- The study builds upon previous work on acoustic theory in the Great Pyramid.

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