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Approach to Spiritual Energy: An Analytical Model

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Abstract: ***Universe is an infinite source of primordial cosmic energy. Our gross physical body and subtle metaphysical body interact with the Universe on diverse ways and ingest this energy. Cosmic energy subsists in our body in three different forms: mental energy, vital energy and spiritual energy which are inter-convertible. Material body consumes foodstuff and performs different physiological actions because of vital energy. Psycho-spiritual energy is preserved in the body as 'Prana Shakti' or life force. Cosmic energy is ethereal and perpetual, even continued to exist as 'eternal soul' after death. Author thinks that cosmic energy as received by human energy field or aura, subsists at seven quantised energy centres which are known as Chakras. In these energy centres, cosmic energy transforms to spiritual energy which is termed as Kundalini Shakti. Chakras or kundalini are non-material entity having no factual existence in physical body. As propounded in Yoga Kundalini Upanishad, Kundalini shakti flows in the etheric body through the nadis or energy channels in a precise way. Physical science didn't venture to investigate its flow mechanism so far, as the issue lies outside its domain. In this paper, author proposes an analytical model of flow of Kundalini Shakti in human body on the basis of quantum physics.***

Keywords: Kundalini, Chakras, Quantised energy state, Opto-acoustic excitation, Solfeggio frequencies.

I. INTRODUCTION

Charkas are part of our subtle body and core centres of cosmic energy latent in it. The word chakra comes from Sanskrit and means "wheel", "disc", or "plexus". They are perceived by spiritualists as vortices (swirls) of life energy, spinning at high speed, vibrating at vital points of our body. So, Chakras are best thought of as Multi-Dimensional Energy Vortices, of subtle cosmic energy that spins or whirl continuously as Prana. In the Taittiriya Upanishad, an ancient Tantric yoga text, a human body is being described as having five sheaths or KOSAS, that interpenetrate each other, sheathing the body like the layers of onion. These five Koshas are:

1) ANNAMAYA KOSHA - the Body of Nourishment - Physical Body.
2) PRĀNAMAYA KOSHA - the Energy Body - Astral Body.
3) MANOMAYA KOSHA - the Mental Body- Astral Body.
4) VIGYĀNAMAYA KOSHA – Intellectual Body - Astral Body.
5) ĀNANDAMAYA KOSHA - the Body of Joy - Causal Body.

Chakras reside inside these energy fields-Koshas. The chakras also function as centres of caption, containment and distribution of energy (prana, spiritual energy, life force, chi) for all bodies, through nadi or energy channels. There are several different and independent routes through which this energy circulates. (Paulson G Lewis 1993, 68-83). Moreover, the seven major chakras are associated with the glandular system of the physical body. As a result, through these chakras our etheric body is manifested most strongly in the physical body (MM Sorge, 50-62).

The Vedas (5000 BC) contain the earliest records about chakras known by mankind. There are seven major chakras, arranged from the base of the spine to the crown of the head and each corresponds to one of the seven major glands of the human body. Each of these chakras are in close correspondence with certain physical functions, vital, mental, emotional or spiritual. In a healthy body, all these vortices rotate at a large speed, allowing the prana to flow upwards through the endocrine system. (MM Sorge, 2012, 51-62). Chakras contain optimum amount of cosmic energy in their balanced condition and in the purest consciousness state of mind. Otherwise, chakras are cleansed and balanced by streaming cosmic energy through them by different methods. After synchronisation seven chakras remain in complete harmony with each other and facilitate the flow of prana through energy channels. According to Yoga-kundalini Upanishad, kundalini refers to the latent spiritual power that exists in every person and responsible for certain physiological and psychological traits of human being. When seven chakras are properly activated and sensitised by optimal amount of cosmic energy, adjacent physical regions of the body are rejuvenated and we are elevated to higher dimensional level of consciousness. This expanded awareness of our mind leads us to the attainment of ultimate S*iddhis* (Vishnuswaroop 2016, 1-77).

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II. KUNDALINI CHAKRAS

The seven chakras and their main areas of influence, in physical and emotional level are given in the following order (Swami Satyananda, 2002, 15-22), (MM Sorge, 2012, 66-122).
Chakra Name - Location - Physical traits - Emotional or Personality traits- Colours.

1) *Mooladhara (Root) Chakra*: Perineum - Excretory Systems - Physical Security & Fear. Red.
2) *Swadhisthana (Sacral) Chakra*: Base of the Spine, Sexual Systems, Self-Expression, Creativity. Orange.
3) *Manipura (Naval)Chakra*: Solar Plexus: Digestive Systems, Willpower, Annoyance. Yellow,
4) *Anahata (Heart) Chakra*: Centre of the Chest, Circulatory and Respiratory Systems, Love. Green.
5) *Vishuddhi (Throat) Chakra*: Throat, Auditory and Vocal Systems, Communications, Blue
6) *Ajna (3rd Eye):* Centre of head, directly in line with forehead, Perception. Indigo
7) *Sahasrara (Crown):* Top of Head, Brain and Nervous System, Ecstasy. Violet

In seven chakras, cosmic energy spins or whirls with specific speed and definite frequency. In root or first chakra, rotational speed and frequency are the least while in the crown chakra these parameters are highest. If seven chakras are blocked and not synchronised with each other, cosmic energy cannot flow through them spontaneously in the astral body, thereby causing abnormal variation in our physical or mental state. In this situation, basic life forces would be slowed down and the individual may feel restless, tired or depressed. A negative attitude, fear, doubt, etc. would pre-occupy the mind, thereby causing mental instability of a person. Physical body functions will be affected as well and several diseases may crop in.

A. Chakra Awakening

When the chakras own optimum amount of energy, the chakra system exist in balanced condition. In this state, chakras function normally and spin with rhythm in proper way to absorb energies from the energy channels in the body. When the flow rate of cosmic energy reaches optimum level of saturation, all negativities of the mind and body would be removed. In this case, the chakras are said to be awakened and they become favourably balanced (William A Fonteijn 2019, 1-3).
Kundalini is described as a sleeping, dormant potential force in the human organism. When awakened, Kundalini is described as rising up from the muladhara chakra, forcing its way through the central nadi (*sushumna*) inside or alongside the spine reaching the top of the head.
The progress of Kundalini through the different chakras is believed to achieve different levels of awakening and a mystical experience. When Kundalini finally reaches the top of the head, sahasrara or crown chakra, an extremely profound transformation of consciousness is developed. Yogi is perfectly detached from the body and mind; the soul finds itself free. The Kuṇḍalinī awakening experience is frequently reported to be a distinct feeling of electric current running along the spine. Traditionally, people visited ashrams in India to awaken their dormant kundalini energy with regular meditation, mantra chanting, spiritual studies and physical asana practice such as kundalini yoga.
This kind of synchronisation of chakras is best done by methodical process of regular meditation and pranayama. Yoga-Tantra proposes that Kundalini can be cleansed through regular practice of Mantra, Tantra, Yantra, Asanas and Meditation. Meditation is a process that follows certain techniques and are designed systematically to remove the psychic debris in the mind that blocks the flow of energy (Dawson Church 2018,142-144). However, there are other processes as well to reactivate the chakras by some external excitations by Optical sources and Sound Sources.

B. Optical Excitaion

The physical, emotional, and spiritual state of human body is related to the colours of chakra. Colours of chakras exhibit variations with the change of these states of body and mind. Colours of chakras do not relate to the original version of tantric chakra scheme but now acknowledged as a part of their uniqueness.
In the year 1970, Christopher Hill gave the version of rainbow colours of chakras which is the most widely accepted colour system for the chakras in the human body (Kurt Leland, Rainbow Body, 2016).
The colour symbolism of crystals correlates with the colours of energy centres or chakras in the body. It is a widely held view that certain crystals and stones possesses high vibrational energy, which can be transmitted to the body and restore energetic balance. Crystals or gemstones of specific colours can speed up chakras healing process and justly restore optimum energies within these vortexes of energy fields of chakras by recharging them.

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C. Acoustic Excitation

Ancient Civilizations have used the power of sound and frequency for centuries to hypnotise, heal and induce higher states of consciousness in the mind. Sound has long been known to have deep therapeutic and healing qualities. Sound and music can also deeply alter our temperaments and state of mind. There are many categories of sound sources of varying frequencies and intensity, which are usable as sonic tools to energise the chakra system. Following sound sources are found to be aligned with seven main chakras. Corresponding frequencies of these sources can be used to stimulate the chakras and to accelerate the streaming of kundalini shakti in the subtle body.

1) *Solfeggio Frequencies:* The Solfeggio frequencies when sung in harmony could bring about spiritual awakening, thereby healing and balancing the Chakra System. Solfeggio Frequencies for seven chakras are as follow: 396 Hz, 396 Hz, 417 Hz, 528 Hz,639Hz,742Hz, 852 Hz. 936 Hz.
2) *Biza Mantra:* Biza means seed. The biza mantras are one-syllable seed sounds that resonate with the energy of the associated chakra. In traditional Hatha Yoga, the seven cleansing biza mantras are: LAM, VAM, RAM, YAM, HAM, SHAM, OM/AUM.
3) *Musical Notes:* The Notes are connected directly to the chakras and interact with the chakras, reshapes and harmonise them as well as releases the blockages, disease, ailments etc. Following Notes are assigned to seven chakras. C, D, E, F, G, A, B.
4) *Vowel Sounds:* Vowels carry the "information energy" of speech. In ancient Sanskrit, Hebrew, Chinese, etc, the vowel sounds are considered to be sacred. Vowel sounds assigned to seven chakras are as follow. UH, OOO, OH, AH, EYE, AYE, EEE.

Bells, Gongs and Singing Bowels tuned to specific frequencies of chakras, can be used in general to produce these cleansing sounds. In Vedic tradition, Nada (sound vibration) Yoga is practiced by the yogis for a long time to reinstate physical and mental balance. Apart from these processes, chanting has been used in all cultures for thousands of years to uplift the spirit and activate energies within self. The sounds of singing bowls produce a kind of energy medicine that can fix and balance the wrecked frequencies of the body, mind and soul. However, it may be pointed out that excitation status and energy levels of different chakras would depend on physical condition, disease, or stress level of the person concerned (Ireton Rick 2012, 6-12).

III. NADI OR CHANNEL

Nadis are the subtle energy channels or energy tubes, made up of meta physical substance. In our subtle body a complex network of nadis or energy pipes carry psychic energy or prana shakti, chi or life-force in the form of cosmic current in our body. The quality and quantity of this energy, flowing through the nadis can resolve overall state of our physical and mental health. Out of numerous numbers of energy channels in the body, following three significant nadis are considered in this study (MM Sorge, 2012, 57-58).

1) *Sushumna Nadi:* The central channel "Sushumna Nadi", known as spiritual channel begins at the base of spinal cord and streams straight up the spine to the highest charka, Sahasrara. It provides direct flow passage of spiritual energy from root chakra to crown chakra.
2) *Pingla Nadi:* The right channel "Pingala Nadi", known as the Sun Channel or Vital energy channel begins at the Swadisthan Chakra and travels up the right side of our spinal cord. It crosses over at the Agnya Chakra and provides the conduit of active or vital energy necessary for physical activities.
3) *Ida Nadi:* The left channel "Ida Nadi" known as Moon Channel or Mental Channel, begins at the Mooladhara chakra and runs up the left side of spinal cord, crossing over at the Agnya Chakra and provides the conduit of the mental or psychic energy flow.

IV. MIND AND BRAIN

The brain is the central processing unit of the body and plays a key role in translating the content of the mind (thoughts, feelings, attitudes, beliefs, memories and imagination) into complex patterns of nerve cell firing and chemical release. Meditation and Pranayama are some of the powerful tools to activate mind and brain and synchronise them to facilitate the flow of kundalini shakti through subtle body. As mind is entangled with the brain so, thoughts, feelings, imaginations in the mind are translated to different type of brain waves. Energy associated with mind causes the neurons in the brain to fire in a certain code to generate different brain waves (Dawson Church 2018, 112-114). Unusual brain wave may cause irregular and random flow of cosmic energy or prana, in the nadis that ultimately lead to the cause of chakra imbalance. The mind, brain and body should have proper coordination during meditation so that cosmic energy may flow through nadis or energy-channels in proper rhythm (Dawson Church 2018, 252-254). Following five different brain wave states are considered in this study.

1) Delta waves (Up to 3 Hz)
2) Theta waves (From 3 to 8 Hz)
3) Alpha waves (From 8 to 12 Hz)

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4) Beta waves (From 12 to 38 Hz)
5) Gamma waves (From 38 to 42 Hz)

Brain waves have specific characteristics, in different meditative state of mind. Fast beta waves (14 Hz and above) are said to be associated with normal waking state of mind when attention is directed towards cognitive tasks and outside world. Alpha waves (7-13 Hz) are associated with dreaming and mild meditation. Theta waves (4-7 Hz) are associated with sleep and deepest state of mediation when senses are withdrawn from the external world. Slow delta waves (0-4 Hz) are associated with deepest state of meditation and dreamless sleep. It is observed, fast gamma wave activity (25-42 Hz) in the frontal lobes increase after meditation. Gamma waves generation reflects superior mental activity in higher dimensional consciousness. (Miroslaw Kozlowski et al 2017, Hegelin John S,1985, 60-65)

V. SIGNIFICANCE

Cosmic energy plays a vital role in psycho-spiritual as well as physical development of human being. This energy remains stored in the ethereal body at seven energy centres or Chakras and flows through nadis or energy-channels in a specific manner (Paulson G Lewis 1993, 34-57). The cosmic energy stored in our ethereal body at seven energy centres or chakra as Kundalini shakti has not been quantified so far. The flow dynamics of this cosmic energy in the delicate body of human being has no scientific model. This study was conducted to find out different numerical parameters and analytical factors of Kundalini chakras and to propose a systematic model of flow dynamics of Kundalini shakti streaming in the subtle body across different chakras.

VI. OBJECTIVES

Major objectives of this study are as follow:

1) To develop a streaming-model of cosmic energy in human body.
2) To quantify energy contents of seven Kundalini chakras.
3) To draw a qualitative relation between brain wave and kundalini energy.

VII. HYPOTHESES

The chakras and kundalini are not materially real, being metaphysical in character. This ethereal energy is not related to causal perception of human senses and physical world. This study assumes that chakras and Kundalini exist inside our body like other forms of energies and follows the norms or rules of physical world. They have certain physical properties, can be quantified by the help of standard laws and theories of quantum physics.

VIII. RESEARCH METHODOLOGY

This work is related to theoretical investigation of various physical parameters like frequency, energy and quantised energy states of kundalini chakras. In this paper a dynamical model on streaming of cosmic energy and its flow mechanism in the subtle body are also proposed. According to Yoga kundalini Upanishad, optical and acoustic signals can stimulate kundalini chakras and accelerate the uninterrupted movement of energy in the body to achieve balance of chakra system. Chakras are important energy centres in the subtle body. Crystals or gems of specific colour have potentiality to restore optimum cosmic energies in these vortexes of energy centres. So, chakras can be balanced and healed by chakra stones and crystals which can speed up chakra healing process. In this study, a virtual optical source, like electrical bulb of white light in the wavelength range (400 nm-800 nm) is considered as agent of activation process. Light beam of moderate intensity from the bulb is focussed on the top of the skull of a subject with proper precautions to activate his crown chakra. Hindus believe that the world began with a sound, and thus sound plays a very important role in our bodies. The delicate and unique sound of singing bowls can deeply affect our bodies, and can beneficially affect the body's physical and psychological state. The sounds of singing bowls produce a kind of energy medicine that can solve the broken frequencies of the body, mind and soul. In kundalini yoga, chakras are directly stimulated and healed by using some vibrational devices like singing bowls, gongs and metallic bells as used by Tibetan monks. Chakras has specific octave tones with which it pulsates. With this point in view, a metallic (brass) bell is considered in the study as virtual source acoustic excitation and it is tuned to the octaves of chakras to stimulate them. Relevant scientific formulae and equations were used to find out quantised energy levels (E_n) of cosmic energy in our body and other parameters of Kundalini Chakras on the basis of mean optical and acoustic frequencies related to seven chakras. Cosmic energy flows through the energy tubes like sushumna, ida and pingla. This energy is converted to spiritual energy, psychic energy and vital energy in definite proportions. This proportional conversions of cosmic energy to three different forms, are also computed. In reference to Optical source and Acoustic sources, frequencies registered shifts or changes while they move across different chakras. These frequency shifts (Δn) were also calculated and corelated with brain wave states.

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IX. THE ANALYTICAL MODEL OF CHAKRAS

Vibrational energy is the primordial form of all forms of energy that was emanated as sound in syllable form, 'AUM' during Big Bang. This vibrational energy was preserved as cosmic energy in universal energy field and manifests in various forms like optical energy, sound energy, electromagnetic energy etc (Shreya Prakash et al, 2015, 27654-27655). Kundalini shakti is a spiritual form of this cosmic energy which is stored in kundalini chakras. In this study kundalini shakti is assumed to exist in the form of electromagnetic and sound energy which are composed of photons and phonons respectively (Dawson Church 2018, 35-65). Basically, photons and phonons are considered as quantised energy particles of electromagnetic energy and sound energy. They exhibit dual nature as waves and particles simultaneously. These photons or phonons move across seven chakras in the form of electromagnetic and acoustic waves and activate them. On activation, chakras emit coherent electromagnetic radiation that appears as Kundalini shakti. Kundalini shakti resides in seven chakras and spin around them as vortex energy fields of electromagnetic waves of definite wavelengths and frequencies (MM Sorge, 2012, 57-60).

The author assumes that cosmic energy stored in our subtle body exists in discrete quantised state in seven energy centres which are known as chakras. So, the seven chakras are basically seven quantum energy states of our delicate subtle body. Universal cosmic energy that enters our body, flows down to root chakra where it remains latent as kundalini. When stimulated by some external sources, this cosmic energy moves up to other chakras. Quantum energy particles like photons or phonons carry this energy to different chakras and stimulate them. During this upward movement of cosmic energy, it is converted to vital energy, psychological energy and spiritual energy in our body. Vital energy delivers life force or prana shakti to our physical body while psychological energy transports mental energy to our mind. During this process of energy flow, chakras are invigorated and obtain optimum cosmic energy to become synchronised or balanced. When chakras are activated, cosmic electromagnetic energy whirls around them as vortices of energy field and gradually diffuse in the adjoining areas of our body through various energy channels. (Paulson G Lewis 1993, 53-57).

The flow of Kundalini shakti in the body, excites the pineal glands which in turn synchronise our heart rhythms, modulate our brain waves and control the respiration rate and all other physiological activities in the body. This state of internal change in the body is known as 'Kundalini awakening'. Hence, Kundalini awakening process is a complex multi-dimensional physiological process that originates at quantum mechanical level and proliferates to spiritual level (William A Fonteijn 2019, 1-3).

X. RESULTS AND DISCUSSIONS

A. Quantised Energy States of Chakras

Table 1. Seven chakras in our subtle body are assigned seven optical colours, violet, indigo, blue, green, orange and red in the visual range of spectrum having wavelengths ranging from nearly 400 nm to 800 nm (Kurt Leland, 2016). In this table-I frequency range of optical colours and their mean values for different chakras are recorded in the following way. For example, Root chakra existing at the base of our body has been assigned red colour having frequency range (430-480) THz. Mean value for this frequency range of red colour band is 455 THz.

Table 1: Energy States Of Chakras And Optical Frequency Scales

No	Chakras / Kundalinis	Colour Bands	Optical Frequency Range ν THz	Mean Optical Frequency ν_m THz	Energy states of Chakras E_n eV	Energy Shift ΔE eV	Frequenc shift $\Delta\nu$ THz
1	ROOT Muladhar	Red	430-480	455	-1.879	-	-
2	SACRAL Svadisthan	Orange	480-510	495	-2.004	ΔE_{12}=0.125	$\Delta\nu_{12}$=40
3	SOLAR PLEXUS Manipura	Yellow	510-540	525	-2.168	ΔE_{23}=0.164	$\Delta\nu_{23}$=30
4	HEART Anahata	Green	540-580	560	-2.312	ΔE_{34}=0.144	$\Delta\nu_{34}$=35
5	THROAT Vasuddha	Pale Blue	580-610	595	-2.457	ΔE_{45}=0.145	$\Delta\nu_{45}$=35
6	THIRD EYE Ajna	Indigo	610-670	640	-2.643	ΔE_{56}=0.186	$\Delta\nu_{56}$=45
7	CROWN Sahasrara	Violet	670-750	710	-2.932	ΔE_{67}=0.289	$\Delta\nu_{67}$=70

Optical colour bands and their frequency range for seven chakras, considered in this study are: Root Chakra: Red, (430-480) THz, Sacral Chakra: Orange, (480-510) THz, Solar Plexus: Yellow, (510-540) THz, Heart Chakra: Green, (540-580) THz, Throat Chakra: Blue, (580-610) THz, Third Eye: Indigo, (610-670) THz., Crown: Violet, (670-750) THz.

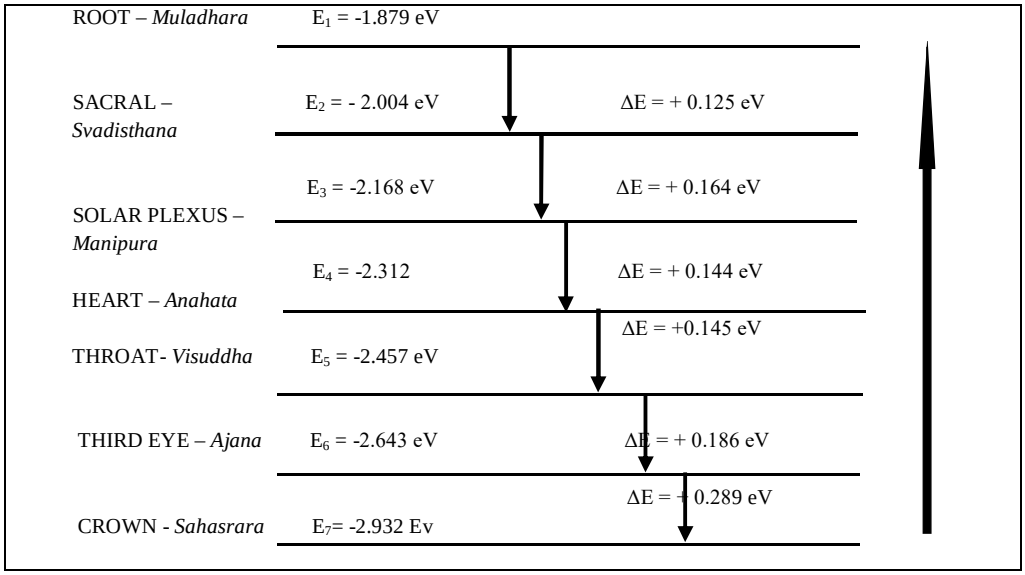
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Optical energy is basically electro-magnetic in character and exists in the form of quantised energy particle, known as photon. Energy of these electromagnetic photon is calculated on the basis of 'Quantum Theory' of radiation. According to this theory, energy of a photon is given by: $E_n = hv_m$, h = Planck's constant and v_m = Mean frequency of respective optical colour band. Calculation shows that seven chakras have following optimum energies corresponding to the mean frequencies of corresponding colour bands. E_1 = -1.879 eV, E_2 = -2.004eV, E_3 = -2.168eV, E_4 = -2.312eV, E_5 = -2.457eV, E_6 = -2.643eV, E_7 = -2.932eV. Here negative energies of chakras imply that, chakras exist in bound energy states, spinning around the nucleus like vortices of energy field. Energies of seven chakras (E_1, E_2, E_3, E_4, E_5, E_6, E_7) as calculated above represent the optimum activation energies of respective kundalini chakras. Some external optical source of moderate intensity, like LED bulbs emitting pure white light is used to supply these energies for stimulating the chakras.

B. Energy Exchange In Chakra

Diagram 1: Our body receives cosmic energy from the Universe. This energy is first received by crown chakra and then this energy streams down to root chakra through susumna nadi. The Kundalini, the igneous energy lies dormant three laps and a half into the first and basic chakra, the mooladhara. Other two channels viz. Ida and Pingla regulates the flow of this energy through our body. Ida controls the flow of psychic energy in subtle body while pingla controls the *vital* energy in gross physical body (Swami Satyananda Saraswati 2002). The Nadis lead and regulate this "Prana" (yin and yang). In diagram-1, seven quantised energy states of seven chakras are shown schematically. In this study, some virtual laser source is considered that can emit white light of moderate intensity. The laser beam is directed to the top of the head of the subject so that the energy of the beam can stream down to mooladhar chakra at the base of spinal cord, through susumna nadi. We take this energy of excitation as 20.00 eV. Hence root chakra will receive this energy and it would retain -1.879 eV energy for its activation. The remaining part of this energy would rise to other six chakras in sequence. Sacral chakra, just above the root chakra would retain -2.004eV energy. This energy will flow as mental energy (lunar current) through Ida. So, ΔE = + 0.125 eV, positive energy will be released in this process during root to sacral chakra transition. This released positive energy would surges through pingla as vital energy (solar current) and activate our physical body. Hence, remaining part (15.992 eV) of the excitation energy as received by mooladhar chakra, would flow through sushumna nadi as activation energy. It is observed in Diagram:1, that crown chakra exists in most stable state with highest retention energy E_7 = -2.932 eV, while root chakra with lowest negative energy -1.879 eV is most unstable. Cosmic energy transits from root chakra to sacral chakra and releases positive energy ΔE= +0.125 eV. For transition from sacral to solar plexus ΔE= +0.164 eV, for transition from solar plexus to heart chakra ΔE= +0.144 eV, during transition from heart to throat chakra ΔE=+0.145 eV, for transition from throat chakra to third eye chakra ΔE= +0.186 eV. So total positive vital energy that is released in this a kundalini cycle and flows through pingla nadi is ΔE= +1.053eV or 5.26% of total excitation or cleansing energy. This positive energy supplies vital energy to our physical body in each cycle of Kundalini excitations.

Diagram 1. Energy- level transition in chakras



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It is very interesting to note that, positive energy released ΔE= +0.186 eV during throat to third eye chakra transition is highest amongst all other transitions. This result has a very motivating significance. It can be inferred: C*hanting of mantras, singing recitation and other throat or vocal cord related activities, streams maximum vital energy in our physical body through energy channels.* So sonic stimulation of throat chakra may be regarded as most efficient method for accelerating vital energy flow in our body. On the other side, least positive energy is released (ΔE= +0.125 eV) during root to sacral chakra transition. *So, sensual activities relating to lower chakra movements are not effectual to activate vital energy streaming in the body.*

From the study we find that total retention energy of seven chakras is 16.395eV which is 81.97% of total excitation energy. This energy will stream or flow through the chakras as mental or psychic energy in each cycle of activation process. The amount of cleansing or activation energy converted to positive vital energy will be 1.053eV or 5.26%. The amount 2.557eV or 12.78% of activation energy will not be used up and will be released from the body in each cycle.

C. Acoustic Frequency Scale

TABLE 2. Sound sources are efficient stimulators that can be used to recharge seven chakras. For this reason, people resort to chanting mantras, singing devotional songs, sounding bells or giant gongs and blowing conch shells before holy rituals. Sound has amazing power to rejuvenate the body in different levels of physical, emotional, mental and spiritual activities (Ireton Rick 2012, 66-67). So, by chanting holy mantras, we are physically tuning our body and soul. Sound waves produce vibration energy that can synchronise seven chakras and balance them, so that they can work harmoniously (Hiroshi Motoyama 2001,282). them to the universe. Chakras are subjected to induced vibration by some external sonic sources. The acoustic sources are synchronised with the chakras to awaken them and the spiritual and extended consciousness develops in our mind (Ireton Rick 2012, 66-67). Our ancient spiritual masters and modern quantum physicists acknowledge that our universe is basically an infinite source of vibrational energy. Dr. Michio Kaku one of the world's prominent scientists held, 'Everything is music.' The Vedas state: 'In the beginning there was Brahman*: Nada Brahma* – World is Sound. Genesis in the Old Testament, asserts that *sound is the first creative act of God preceding the manifestation of light*. Around Fifty letters in Sanskrit alphabets that sound with different wavelengths and frequencies, are the root sounds, may be used to balance and align chakras. Due to the complexity of wave functions associated with these sounds, multiple octaves are present in them. These octaves are considered to act as powerful sonic tools for activation of chakras.

Table 2. Acoustic frequency shifts in chakras

No	Chakras	Solfeggio frequency n_s Hz	Chakra tones based on *432Hz Grid Frequency n_g Hz	Shift in Solfeggio scale Δn_s	Shift in Grid Scale Δn_g
1	ROOT Muladhar	396	**512**,256,128 C	-	-
2	SACRAL Svadisthan	417	**576**,288,144 D	Δn_{s12} 21	Δn_{g12} 64
3	SOLAR PLEXUS Manipura	528	**648,**324,162 E	Δn_{s23} 111	Δn_{g23} 72
4	HEART Anahata	639	**729,**364.5,182.25 F	Δn_{s34} 111	Δn_{g34} 81
5	THROAT Vasuddha	741	**768**,384,192 G	Δn_{s45} 102	Δn_{g45} 39
6	THIRD EYE Ajna	852	**864**,432,216 A	Δn_{s56} 111	Δn_{g56} 96
7	CROWN Sahasrara	936	**972**,486,243 B	Δn_{s67} 84	Δn_{g67} 108

1) *Three* Octaves as chakra tones are considered in 432 grid frequency scale for complexity of sound. In this scale highest frequency is taken to adjust it with Solfeggio scale.
2) *When sound OM /AUM is chanted, vibration frequency of 432 Hz is generated. As such AUM is the basic sound of the Universe.

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Sound is the fundamental energy and creative force in the universe and can take dynamic role for chakra excitation. The power and sacredness of vowel sound is known for thousands of years. Vowel sounds are considered as the vibration of Heaven. Resonance of Resonance of sacred vowel sounds with the energy centres of the body is a well-known practice in Kundalini arousal process. In this study, sound source having Solfeggio frequency and 432 Hz-Grid frequencies are considered as sonic tools for chakra tuning. Solfeggio frequencies make up ancient six-tone scale, used in sacred music. These tones were believed to impart spiritual blessings when sung in harmony (Sonya Joseph, 2019). The main Solfeggio frequencies are: 396, 417, 528, 639, 741, 852, 936 Hz. and these frequencies are considered in this study for chakra balancing. On grid scale, highest Octaves of 432 Hz-grid frequencies are considered here as they are very close to Solfeggio frequencies. These octaves are 512 Hz, 576 Hz, 648 Hz, 729 Hz, 768 Hz, 864 Hz, 972 Hz respectively.

The study revealed the following facts which are noted in Table 3:

a) In Solfeggio scale, root chakra and sacral chakra frequencies differ by 21 Hz. When we move to sacral chakra from root chakra, activation frequency of sound increases by 21 Hz in this scale with a corresponding decrease in wavelength of the wave. In 432Hz grid frequency scale minimum variation of activation frequency is 39 Hz when we move from heart to throat chakra.

b) In Solfeggio scale, highest variation of activation frequency is observed to be 111 Hz during throat chakra and third eye chakra transition which is very close to 108 Hz in grid scale during eye to crown chakra transition. In Solfeggio scale, shift of stimulation frequencies across 2^{nd}, 3^{rd}, 4^{th}, 5^{th} and 6^{th} chakras are more or less uniform around 100 Hz. But shift of activation frequencies across different levels of other transitions is very irregular in 432 Hz grid scale.

D. Frequency Scale Of Brain Wave

Table 3. Brain is quantum mechanically entangled with mind that controls the flow of spiritual cosmic energy in our subtle body. As a matter of fact, brain is a physical entity consisting of nearly 86 billion neurons and equal number of other cells. Brain activity is initiated by the interactions of neurons and release of neurotransmitters in response to nerve impulses. On the other side, mind is a metaphysical notion that in turn dictates our brain activity. Relation between brain and mind, the interaction between a physical entity and an unreal metaphysical entity is a debatable issue for a long time.

Table 3. Brain wave spectrum

Wave	Frequency Hz	Maximum frequency Hz	Amplitude micro volt	Maximum energy f eV	Impulse
Delta - δ	0.5 -4	4	100	7	Meditative state, Deep sleep, Healing, Regeneration, No body- awareness
Theta - Θ	4-8	8	110	17	Creativity, Memory, Imagination, Intuition.
Alpha - α	8-14	14	40	34	Relaxation, Resting of brain, Calmness Alertness, Mind -body coordination.
Beta - β	14-30	30	11	70	Concentration, Arousal Alertness, Judgemental Intellectual activity,
Gama - γ	> 30	100	4	140	Universal love, Higher virtues, Expanded consciousness, Spiritual emergence.

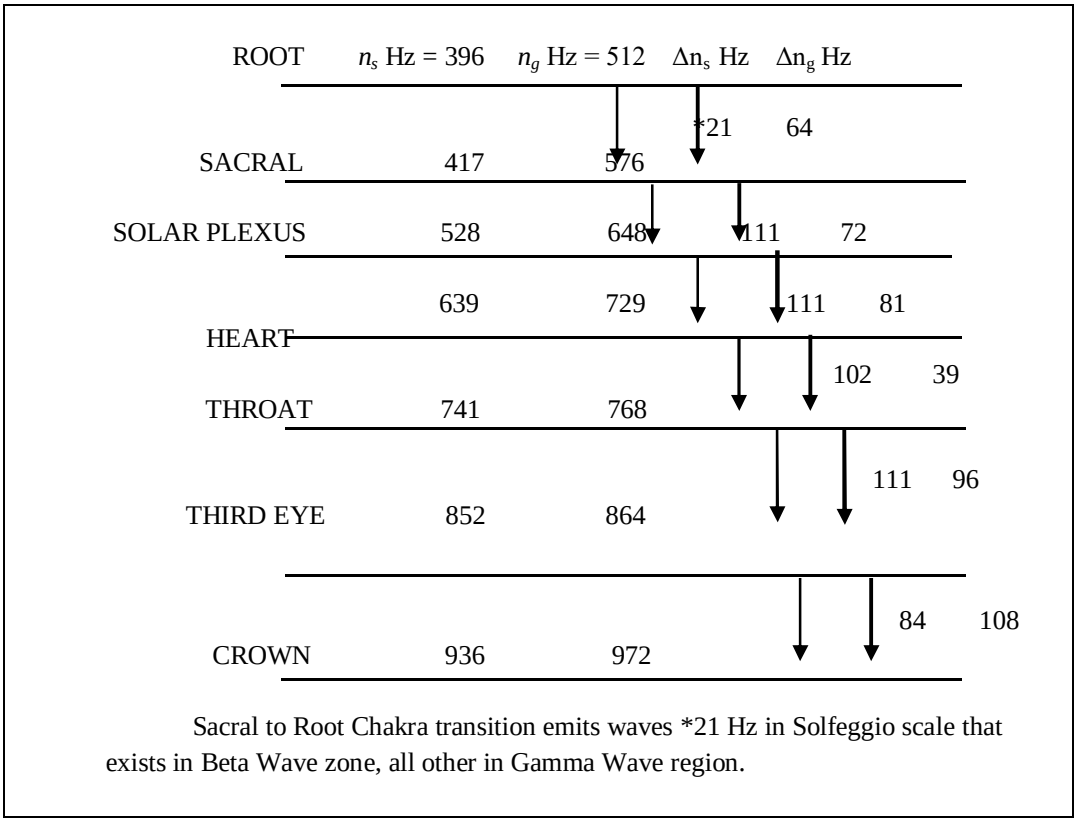
There is a causal relation between Kundalini awakening and mind dynamics. It is observed that Kundalini is activated when one resorts to meditation and involves in spiritual activities. In the state of unconditional love and devotion, Kundalini chakras are very active in the spiritual body. When Kundalini rises to higher chakras, the mind is found to slow down. According to Vedic Science, the mind is hierarchically structured in layers from gross to subtle, from excited to de-excited, from localized to unlocalized or field-like, and from diversified to unified (John S Hegelian,1985,61-62). Meditators exhibit lower frequency *alpha* and *theta* brain wave activity, during meditation. Brain waves are correlated to different awareness levels of mind (Hiroshi Motoyama 2001,282-283). Lower the brain wave frequency; the higher would be the awareness level of mind. Fast beta waves are correlated with material reality; alpha waves are correlated with perception of subtle energy; theta waves with the realization of one's true self and delta waves are correlated with out-of-body experience and least excited state of mind activities (Castro M de John 2014, 1-6).

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E. Frequency Shift

Diagram 2: It is seen from Table:3 and Diagram 2, activation frequency of chakras increases as the we move up the chakras from mooladhar to sahasrara. During different chakra transitions, frequencies shift by 21Hz, 111Hz, 111Hz, 102Hz, 111Hz and 84Hz respectively for seven chakras in Solfeggio scale.

Diagram 2. Acoustic frequency shift in chakra transition



Sacral to Root Chakra transition emits waves *21 Hz in Solfeggio scale that exists in Beta Wave zone, all other in Gamma Wave region.

During root chakra to sacral chakra transition, frequency shift ($\Delta\nu$) lies in the β-wave region while in all other transitions, frequency shifts lie in high γ- wave region of brain waves. So, it can be predicted that *dominant β-wave activity in brain enhances, Kundalini arousal from root to sacral chakra with prevalence of concentration, alertness and judgemental qualities of meditator.* In all other Kundalini transitions, due to high level γ-wave activity, consciousness, higher virtues, spiritual orientation would not develop in the mind. According to 432Hz grid scale, all kundalini chakra transitions correspond to high level γ-wave activity of brain that reflects lower consciousness level of meditator during meditation or other religious practices. Gama brain waves are the fastest brain wave with higher frequency but with the smaller wavelength. Gamma wave activity of brain is associated higher excited and high level of cognitive functioning of mind (Jain S. Mitra, R. Wiart J. 2015, 95-107). These relations are shown schematically in Diagram 2.

F. Energy Transitions

Table **4.** To stimulate Kundalini chakras, a virtual optical source (white light) in the wavelength range (400nm-800nm) is considered in this work as source of activation energy. Light beam is focussed on the skull to activate crown chakra. The intensity of the incident radiation should be controlled in this perspective to evade damage of the absorbing tissues in the skull. In this work, it is being assumed that 20 eV activation energy is pumped in the body through crown chakra in a single phase. This energy streams down to root Chakra. Root chakra absorbs -1.879eV energy from incident radiation to recharge itself. Residual +18.121eV cosmic energy moves up to sacral chakra through pingla nadi and activate it with - 2.004 eV cosmic energy. Remaining +15.992 eV energy moves up to solar plexus and stimulate it with -2.168 eV. As a result, remaining +13.66 eV flows up to heart chakra which is recharged with -2.312 eV. Remaining +11.204 eV energy spirals up to throat chakra and recharges it with - 2.457 eV.

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Rest amount of energy +8.602 eV reaches third eye chakra and balances it with -2.643 eV. Remaining +5.773 eV energy reaches the crown chakras and recharges it with -2.932 eV. This completed the whole recharge process. Finally, excess amount of energy +2.55 eV leaves our body through crown chakra after boosting or synchronizing all the seven chakras and the chakra network as a whole. These data are recorded in Table:4.

Table 4. Energy states of kundalini chakras

No	Chakras	Colours of Chakras	Optical Frequency Range THz	Mean Optical Frequency THz	Psychic Energy eV	Vital Energy ΔE eV	Activation Energy +eV
1	ROOT	Red	430-480	455	-1.879	-	18.121
2	SACRAL	Orange	480-510	495	-2.004	ΔE_{12}= +0.125	15.992
3	SOLAR PLEXUS	Yellow	510-540	525	-2.168	ΔE_{23}= +0.164	13.66
4	HEART	Green	540-580	560	-2.312	ΔE_{34}= +0.144	11.204
5	THROAT	Pale Blue	580-610	595	-2.457	ΔE_{45}= +0.145	8.602
6	THIRD EYE	Indigo	610-670	640	-2.643	ΔE_{56}= +0.186	5.773
7	CROWN	Violet	670-750	710	-2.932	ΔE_{67}= +0.289	**2.552**

*****Induced energy of activation is taken to be 20 eV

G. Flow Of Kundalini Shakti

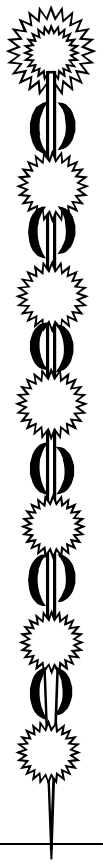
Diagram 3: In this diagram, flow of kundalini in our subtle body is shown schematically according to the kundalini tantra. In this paper conventional model of Kundalini chakras is used (Kundalini Tantra, Swami Satyananda 2002). In this model, cosmic energy is poured down into

body through sushumna nadi and remain latent in root chakra**.** The energy channels, Ida and Pingala along with sususmna controls and monitor the flow of this cosmic energy in different parts of our body. Cosmic energy has three forms: Spiritual energy, Psychological energy or Mental energy and Vital or Physical energy. Ida nadi and Pingala nadi spiral around the sushumna channel and interact with each other at three chakra centres (node). Ida controls the flow of mental or psychological energy, pingla controls the flow of vital energy and sushumna monitors the flow of spiritual energy (Genevieve Paulson 1993, 167-180). Part of cosmic energy as received by our body is converted to vital energy when energy channels, ida and pingala interact with the chakra centres. This vital energy streams and is transmitted to our physical body through energy channels. Flow mechanism of cosmic energy in three channels viz. suhumna, ida and pingla is demonstrated schematically in diagram 3.

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Diagram 3: Energy Flow In Chakras

Chakra	Recharge Energy	Position
7. Crown chakra	-2.932 eV	
6. Third Eye Chakra	-2.643 eV	
5. Throat chakra	-2.457 eV	
4. Heart chakra	-2.312 eV	
3. Solar plexus chakra	-2.168 eV	
2. Sacral chakra	-2.004 eV	
1. Root chakra	-1.879 eV	



XI. CONCLUSIONS

Chakras are sensed as quantised energy states of cosmic energy that exists in our body. This energy spins around seven chakra-nucleus as vortices of energy fields with certain frequency. In this whirlpool of energy fields, energy density of cosmic energy gradually becomes denser and it is transformed into spiritual energy, psychological energy and vital energy in our body. In spite of the fact that chakras have metaphysical existence in the body, yet these energy centres or chakras have a close relationship with the gross body. As a matter of fact, chakras bridge passages between our subtle body and gross physical body. The seven chakras act as modulation-demodulation centres where cosmic energy is converted to other forms of energy and diverts to different energy channels. This kind of transformation of energy and its flow rate across the energy channels can be accelerated by meditation and other religious practices.

This study observes the following facts:

1) Cosmic energy of our body exists in seven quantised states and remains localised as seven energy centres which are known as Kundalini Chakras.

2) Maximum psycho-physical energy is generated during throat to crown chakra transition of kundalini. So sonic stimulation of throat-chakra in the form of *mantra* chanting, devotional singing etc may be considered as efficient method of accelerating spiritual energy flow in our body.

3) Crown chakras can store maximum cosmic energy -2.932eV which is quantitatively *five* times that stored by root chakra. So, crown chakra is the most powerful storage centre of kundalini shakti.

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4) When Kundalini rises from root chakra to sacral chakra, dominant β-wave activity is observed in brain. Concentration, alertness, judgemental qualities of our brain is enhanced in this case. Our mind transits from excited state to de-excited state and gradually slows down. In all other kundalini transitions, high level γ-wave activity is observed in brain.

5) In every phase of Kundalini cycle, nearly 82% of the activation energy is converted to psychic or mental energy and 5.26% to vital or physical energy. 12.78% of activation energy is not used up, being released from the body in each cycle.

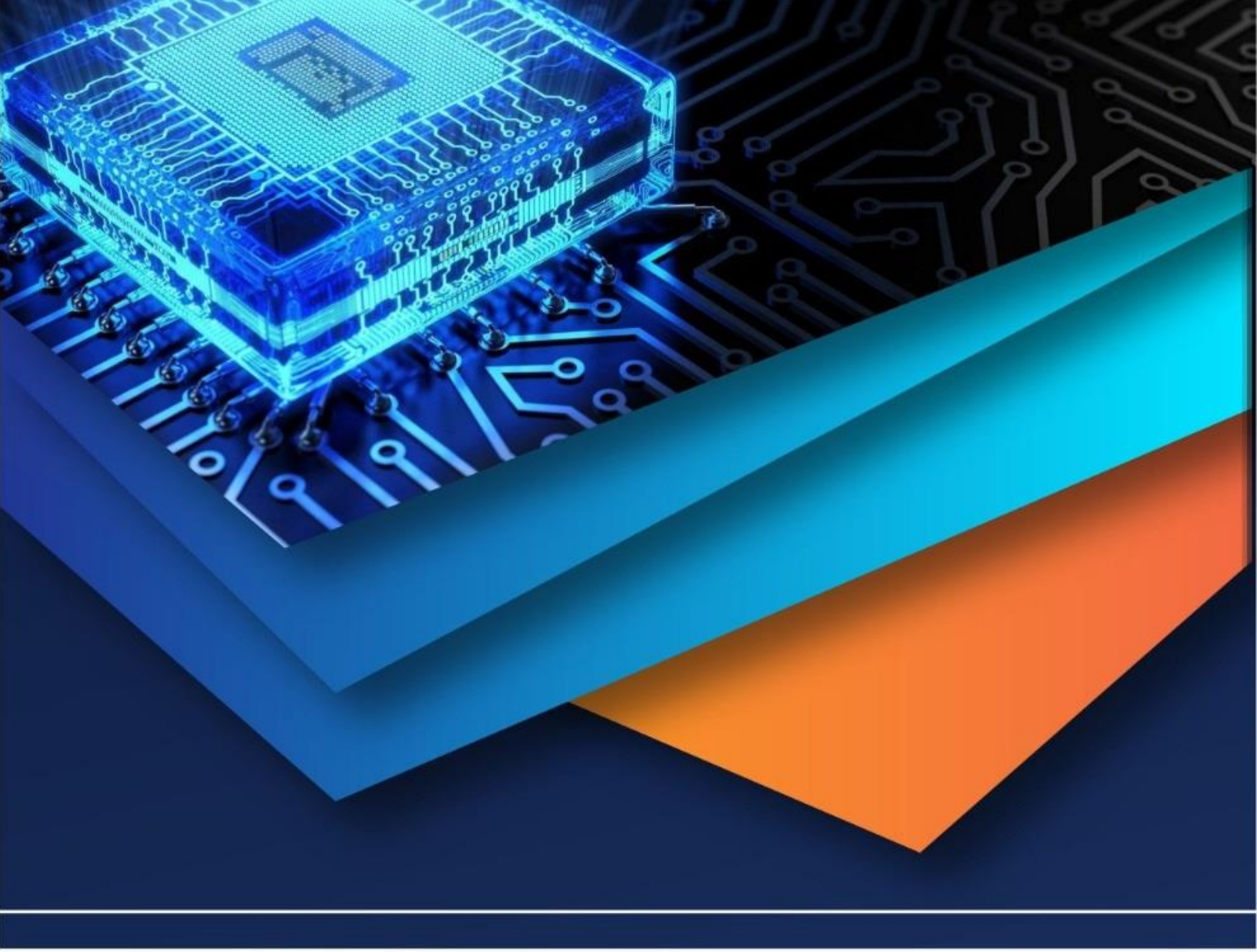
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