ANHADNAAD ENERGY FIELD (ANEF) THEORY OF UNIVERSE

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ABSTRACT

Quantum Mechanics is the most successful scientific theory of microcosm ever proposed which has completely changed our view of the world. It has completely rejected the objective reality and determinism and embraced the indeterminism and probabilistic nature of underlying microcosm. Explanation of Ultraviolet Catastrophe in Black Body Radiation by Max Planck and of Photoelectric Effect by Albert Einstein on the basis of Quantum Hypothesis triggers the failure of Classical Mechanics and the rise of Quantum Mechanics on the world screen. Einstein, one of the founders of Quantum Mechanics, disliked the loss of determinism in measurement and thought that there should be a local hidden variable theory underlying the Quantum mechanics. But he could not succeed in finding one. Louis de-Broglie and David Bohm proposed a hidden variable theory called Pilot Wave theory which was rejected by the contemporary physics community by saying that it only added unnecessary mathematics and also can't explain anything else which was not known before. In this paper, author has tried to uncover those local hidden variables pointed out by Albert Einstein. According to this theory, the Universe is being governed by the hidden energy field called Anhadnaad Energy Field (ANEF) which is responsible for its origin, existence and working. Universe is either continuously being created or continuously being destroyed through Anhadnaad by the Supreme Cosmic Consciousness of the Eternal Existence which is the most Fundamental Reality. Quantum Mechanics is based on the assumption of wave-particle duality of matter as well as radiations. The Pilot Wave theory on the other hand proposed a model in which a real wave physically guides a real particle through the medium called Aether. While ANEF is based on the assumption that both the guiding waves as well as the particles are real which, unlike Pilot Wave theory, interact with each other in totally different manner in which a wave can't push a particle directly rather it vibrates the medium (NIRGUNA) which results into induced vibratory as well as translational motion of the particles as per the mathematical equations given in the paper which are also explaining the Ultraviolet Catastrophe in Black Body Radiation Experiment and The phenomenon of Photoelectric Effect without considering the quantum hypothesis.

Keywords:-NIRGUNA, SARGUNA, Anhadnaad, DAR (Displacement Amplitude Resonance), Primary Particles, Secondary Particles, UV Catastrophe, Photoelectric Effect.

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As per the SRI GURU GRANTH SAHIB (SGGS), there are two phases of reality viz. NIRGUNA and SARGUNA. NIRGUNA (Abstract Space) is the Formless Fundamental Phase of Reality with no measureable physical properties. NIRGUNA is the pre-creation phase of the SUPREME CONSCIOUS BEING WHO metamorphoses Himself into His creation phase called SARGUNA (the Universe) having measureable physical properties. There are many Shabads (hymns) of Gurbani in Sri Guru Granth Sahib (SGGS) which explain the two phases of Reality and its metamorphism from one phase to another as per His Will.

ੴ ਸਤਿਨਾਮੁ ਕਰਤਾ ਪੁਰਖੁ ਨਿਰਭਉ ਨਿਰਵੈਰੁ ਅਕਾਲ ਮੂਰਤਿ ਅਜੂਨੀ ਸੈਭੰ ਗੁਰਪ੍ਰਸਾਦਿ॥[1]

One Universal Creator GOD. His Name is Truth. Creative Being. Omnipresent. Without Fear. Without Hatred. Beyond the realm of Time. True Eternal Existence. Beyond Birth and Death. Self Existence. By Guru's Grace.

Explanation:-There is only One Formless Fundamental Reality Whose attributes are beyond the realm of Time. He is The One Universal CREATOR. HE and HIS Consciousness is Omnipresent. Nothing is Superior to Him.

Nothing is Equivalent to HIM. Have Eternal and True Existence. HE is beyond Birth and Death. He is self-Originated. Only the Enlightened Master (The True Guru) can guide to achieve the unification with HIM.

ਸਰਗੁਣ ਨਿਰਗੁਣ ਨਿਰੰਕਾਰ ਸੁੰਨ ਸਮਾਧੀ ਆਪਿ ॥ ਆਪਨ ਕੀਆ ਨਾਨਕਾ ਆਪੇ ਹੀ ਫਿਰ ਜਾਪਿ ॥²

HE possesses all attributes. HE transcends all attributes. HE is the Formless Lord. HE Himself in Primal Samaadhi. Through His Creation, O Nanak, HE meditates on Himself.

Explanation:-The Supreme Formless Fundamental Reality in non-creation phase i.e. NIRGUNA remains in the state of having no waves and particles. But in the creation phase: HE metamorphoses Himself into SARGUNA (the universe).

ਆਪਨ ਆਪ ਆਪ ਹੀ ਅਚਰਜਾ ॥ ਨਾਨਕ ਆਪਨ ਰੂਪ ਆਪ ਹੀ ਉਪਰਜਾ ॥³

HE Himself, in and of Himself, is the most wonderful. O Nanak, HE Himself created His Own Form.

Explanation:-The most wondrous thing in this universe is that The Supreme Fundamental Reality originates on His Own and then He metamorphoses Himself from NIRGUNA to SARGUNA having physically measureable properties (the universe).

ਚੱਕ੍ਰ ਚਿਹਨ ਅਰੁ ਬਰਨ ਜਾਤਿ ਅਰੁ ਪਾਤਿ ਨਹਿਨ ਜਿਹ ॥ ਰੂਪ ਰੰਗ ਅਰੁ ਰੇਖ ਭੇਖ ਕੋਊ ਕਹਿ ਨ ਸਕਤ ਕਿਹ ॥⁴

HE Who is without mark or sign, HE Who is without caste or line. HE Who is without colour, form and any distinct norm.
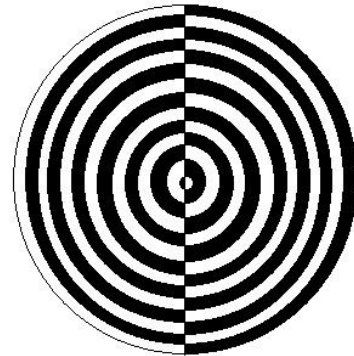
Explanation:-In this shabad (hymn) 10th Guru Gobind Singh Ji explained the nature of the pre-creation phase of Fundamental Reality called NIRGUNA that HE has no measurable physical properties, on the basis of which His nature, appearance and form can be explained.

ਜਬ ਨਿਰਗੁਨ ਪ੍ਰਭ ਸਹਜ ਸੁਭਾਇ ॥ ਤਬ ਸਿਵ ਸਕਤਿ ਕਹਹੁ ਕਿਤੁ ਠਾਇ ॥⁵

When GOD was without attributes, in absolute poise. Then where was existence of matter and energy.

Explanation:-When The Supreme Formless Fundamental Reality by default remains in the state of having no waves and particles (NIRGUNA). Then how come there be matter (ਸਿਵ) and the measureable energy (ਸਕਤਿ) exist at all during pre-creation phase (NIRGUNA).

The process of metamorphism of NIRGUNA begins by the Supreme Consciousness (the Primordial Energy) of NIRGUNA through the onset of Anhadnaad, the spherical wave given by:

$$\Psi(x, \pm t) = Ae^{-i(kx+\omega t)} + Be^{i(kx-\omega t)}$$

Where 'k' is the wave number of Anhadnaad and **'ω'** is the angular frequency of Anhadnaad. Above equation represents the time evolution of Anhadnaad originating from a random point source in NIRGUNA, in such a way that the first part ($Ae^{-i(kx+\omega t)}$) represents the time evolution in forward direction of time with positive '**+t**' i.e. in our side of the universe while the second part ($Be^{i(kx-\omega t)}$) represents the time evolution in reverse direction of time with negative '**-t**' i.e. the opposite side to our side of the universe in which time flow in reverse direction with respect to us. Presence of 'i' and '-i' in the equation representing the two opposite sides of the universe having net angle of phase difference equal to 180 degrees as 'i' caused the rotation by 90 degrees counter

clockwise while '-i' caused the rotation by another 90 degrees clockwise thereby net angle of phase between opposite sides of the universe is 180 degrees. Anhadnaad propagates spherically in all directions at the speed of 2.99792458×10^8 ms^{-1} producing a hidden energy field called Anhad Naad Energy Field (ANEF). Frequency of Anahadnaad is infinite and highest possible at which anything can vibrate in this universe. The following Shabads (Hymns) from Sri Guru Granth Sahib (SGGS) explain the metamorphism of NIRGUNA into SARGUNA and vice versa:

ਕੀਤਾ ਪਸਾਉ ਏਕੋ ਕਵਾਉ॥ਤਿਸ ਤੇ ਹੋਏ ਲਖ ਦਰੀਆਉ॥[6]

You created the vast expense of the Universe with one word. Millions of rivers of creation begin to flow.

Explanation:-Expansion of the universe begins with the primordial vibration (Anhadnaad) which leads to the formation of millions of rivers heavenly bodies (galaxies).

ਪਸਰਿਓ ਆਪਿ ਹੋਇ ਅਨਤ ਤਰੰਗ॥ਲਖੇ ਨਾ ਜਾਹਿ ਪਾਰਬ੍ਰਹਮ ਕੇ ਰੰਗ॥[7]

HE Himself is all pervading, in endless vibrations. Attributes of NIRGUNA can't be known.

Explanation:-Expansion occurred through primordial vibration (Anhadnaad) having infinite frequency (*ਅਨਤ ਤਰੰਗ*). Nobody can assess the properties (*ਰੰਗ*) of NIRGUNA (*ਪਾਰਬ੍ਰਹਮ*).

ਆਪਿ ਸਤਿ ਕੀਆ ਸਭੁ ਸਤਿ॥ਤਿਸੁ ਪ੍ਰਭ ਤੇ ਸਗਲੀ ਉਤਪਤਿ॥ਤਿਸੁ ਭਾਵੈ ਤਾ ਕਰੇ ਬਿਸਥਾਰੁ॥ਤਿਸ ਭਾਵੇ ਤਾ ਏਕੰਕਾਰੁ॥[8]

HE Himself is true, and all that HE has made is true. The entire creation came from GOD. As it pleases Him, HE creates the expanse. As it pleases Him, HE becomes the One and Only again.

Explanation:-The Supreme Conscious Being is the fundamental reality and everything which emerges from Him is also having real existence. The entire creation came from Him. Expansion through Anhadnaad represents the phase of creation while discontinuation of Anhadnaad represents the reversal to pre-creation phase called NIRGUNA. Both expansion and discontinuation of Anhadnaad occurs as per His will.

ਓਅੰਕਾਰਿ ਬ੍ਰਹਮਾ ਉਤਪਤਿ॥ ਓਅੰਕਾਰਿ ਕੀਆ ਜਿਨਿ ਚਿਤਿ॥ ਓਅੰਕਾਰਿ ਸੈਲ ਜੁਗ ਭਏ॥ ਓਅੰਕਾਰਿ ਬੇਦ ਨਿਰਮਏ॥ ਓਅੰਕਾਰਿ ਸਬਦਿ ਉਧਰੇ॥ ਓਅੰਕਾਰਿ ਗੁਰਮੁਖਿ ਤਰੇ॥ ਓਨਮ ਅਖਰ ਸੁਣਹੁ ਬੀਚਾਰੁ॥ ਓਨਮ ਅਖਰੁ ਤ੍ਰਿਭਵਣ ਸਾਰੁ॥[9]

From Oankaar, The Primal Vibration, Brahma (The Universe) was created. The Brahma (The Universe) kept Oankaar, The Primal Vibration, in his consciousness. From Oankaar, The Primal Vibration, the Matter and Time was created. From Oankaar, The Primal Vibration, entite knowledge of the Universe was created. Oankaar, The Primal Vibration, saves the world through word. Oankaar, The Primal Vibration, saves the Gurmukhs (who live life as per the teachings of his Guru). Listen the reality behind the word Oan (ਓਅੰ). Oan (ਓਅੰ) is the essence of the Universe.

Explanation:-From Oankaar, the primordial vibration (Anhadnaad), GOD created the universe and it is omnipresent in the universe. Anhadnaad created Matter (*ਸੈਲ*) and Time (*ਜੁਗ*). Anhadnaad created entire knowledge of the Universe (*ਬੇਦ*). Anhadnaad created the words (languages) to collect the divine knowledge for the salvation of humanity. Anhadnaad is the essence of whole creation.

ਨਾਮ ਕੇ ਧਾਰੇ ਸਗਲੇ ਜੰਤ॥ਨਾਮ ਕੇ ਧਾਰੇ ਖੰਡ ਬ੍ਰਹਮੰਡ॥ਨਾਮ ਕੇ ਧਾਰੇ ਸਿਮ੍ਰਿਤਿ ਬੇਦ ਪੁਰਾਨ॥ਨਾਮ ਕੇ ਧਾਰੇ ਸੁਨਨ ਗਿਆਨ ਧਿਆਨ॥ਨਾਮ ਕੇ ਧਾਰੇ ਆਗਾਸ ਪਾਤਾਲ॥ਨਾਮ ਕੇ ਧਾਰੇ ਸਗਲ ਆਕਾਰ॥[10]

Anhadnaad is the support of all creatures. Anhadnaad is the support of celestial bodies and entire Universe. Anhadnaad is the support of entire knowledge of the Universe. Anhadnaad is the support by which hear of spiritual wisdom and meditations. Anhadnaad is the support of Akaashic Ethers and Nether Regions. Anhadnaad is the support of everything having dimensions.

Explanation:-Entire life, all the celestial bodies of the universe, entire knowledge written or unwritten, everything having dimensions whether on forward (ਆਗਾਸ) or on reverse (ਪਾਤਾਲ) side of the origin of Time/ Universe, All are created through Anhadnaad (ਨਾਮ).

ਸਚ ਖੰਡਿ ਵਸੈ ਨਿਰੰਕਾਰੁ ॥ ਕਰਿ ਕਰਿ ਵੇਖੈ ਨਦਰਿ ਨਿਹਾਲ ॥ ਤਿਥੈ ਖੰਡ ਮੰਡਲ ਵਰਭੰਡ ॥ ਜੇ ਕੋ ਕਥੈ ਤ ਅੰਤ ਨ ਅੰਤ ॥ ਤਿਥੈ ਲੋਅ ਲੋਅ ਆਕਾਰ ॥ ਜਿਵ ਜਿਵ ਹੁਕਮੁ ਤਿਵੈ ਤਿਵ ਕਾਰ ॥ ਵੇਖੈ ਵਿਗਸੈ ਕਰਿ ਵੀਚਾਰੁ ॥ ਨਾਨਕ ਕਥਨਾ ਕਰੜਾ ਸਾਰੁ ॥ [11]

In the realm of Truth, the Formless Lord abides. Having created the creation, HE watches over it. By His Glance of Grace, HE bestows happiness. There are celestial bodies, galaxies and Universes. If one speaks of them, there is no limit, no end. There are worlds upon worlds of His Creation. As HE commands, so they exist. He watches over all, and contemplating the creation, HE rejoices. O Nanak, to describe this is as hard as steel.

Explanation:-Upon the unification of one's soul with Almighty GOD, The GOD Himself abides in his consciousness. The GOD that Himself bestows happiness by His Glance of Grace over His Own Creation in which there are lots of celestial bodies, galaxies and the Universes whose number can't be expressed. There are worlds upon worlds of His Creation in which everything is happening as per His commands. HE watches and contemplates over His entire Creation which rejoices Him. O Nanak, it is impossible to describe all this.

A *Field* is a wave disturbance, in the fabric of NIRGUNA, which expands spherically in all directions at the speed of light while a *particle* more specifically *a secondary particle* is a localized disturbance in the fabric of NIRGUNA which always spawn along with the wave disturbance (guiding wave). The fields as well as the particles are produced through the same process called DAR (Displacement Amplitude Resonance) with only difference is the amount of energy available. Disturbances in the fabric of NIRGUNA can be categorized in 3 categories:

I. Primary particles

A primary particle (pseudo particle) is an extra amplitude wave front produced by the secondary particles vibrating at resonant frequency in an atom through the process of DAR (Displacement Amplitude Resonance). Primary particles move at the speed of Anhadnaad, thereby having least possible mass in this universe which is considered as zero mass and just exist as force carrier. Photons are made of series of primary particles. Energy of a photon depends upon the number of primary particles crossing through an imaginary curved spherical surface per unit time.

II. Secondary Particles

Particles belonging to this category are real particles having independent existence. These particles exist as localized disturbances in the fabric of NIRGUNA which always spawn along with the wave disturbances (mother guiding wave or particle waves in general). Unlike primary particles, these are otherwise motionless but are movable through induced motion caused by guiding waves as per the equation of induced motion given in the paper.

III. Particle Waves

Particle waves are produced by all the secondary particles in NIRGUNA through their vibratory motion induced by the mother guiding waves. These waves constitute the fields around the particles. These are analogous to the Anhadnaad originating from the centre of origin of the universe obeying the same wave equation as that of Anhadnaad given below:

$$\Psi (x, \pm t) = Ae^{-i(kx+\omega t)} + Be^{i(kx-\omega t)}$$

Particle waves as well as Anhadnaad both acts as guiding waves for the secondary particles.

The following Shabads (Hymns) indicates the connection of vibrations, waves and particles with the phase of creation called SARGUNA.

ਆਪੇ ਪਟੀ ਕਲਮ ਆਪਿ ਉਪਰਿ ਲੇਖੁ ਭਿ ਤੂੰ ॥ ਏਕੋ ਕਹੀਐ ਨਾਨਕਾ ਦੂਜਾ ਕਾਹੇ ਕੂ ॥ [12]

You Yourself are the writing tablet, and You

Yourself are the pen. You are also what is written on it. Speak of the One Lord, O Nanak; how could there be any other?

Explanation:-He is Himself the Space (ਪਟੀ i.e. NIRGUNA), Himself the Pen of Primordial Energy (ਕਲਮ i.e. Anhadnaad) Who metamorphoses the Space (NIRGUNA) into the universe (SARGUNA). There is nothing except Him.

ਆਪੇ ਸੂਤੁ ਆਪੇ ਬਹੁਮਣੀਆ ਕਰਿ ਸਕਤੀ ਜਗਤੁ ਪਰੋਇ॥ਆਪੇ ਹੀ ਸੂਤਧਾਰੁ ਹੈ ਪਿਆਰਾ ਸੂਤੁ ਖਿੰਚੇ ਢਹਿ ਢੇਰੀ ਹੋਇ॥[13]

HE Himself is the thread, and HE Himself is the many beads; through His Almighty Power, HE has strung the worlds. HE holds the thread, and when HE withdraws the thread, the beads scatter into heaps.

Explanation:-He Himself becomes particles and the thread which tied the particles together. He Himself holds the thread and when He pulls the thread everything made of particles fall apart. Here the thread represents the Anhadnaad (the primordial vibration) which acts as mediator for all the forces between particles and tied them together to create the wonderful Universe. When He withdraws the thread means stops the Anhadnaad, everything made of particles disintegrate and disappears at the speed of light.

ਏਕ ਮੂਰਤਿ ਅਨੇਕ ਦਰਸਨ ਕੀਨ ਰੂਪ ਅਨੇਕ॥ਖੇਲ ਖੇਲ ਅਖੇਲ ਖੇਲਨ ਅੰਤ ਕੋ ਫਿਰਿ ਏਕ॥[14]

Thou, the One Entity, appear as many creating innumerable forms. After playing the world-drama, when Thou will stop the play, Thou will be the same One Entity again.

Explanation:-The Universe, having innumerable forms, is just the extension of the One Fundamental Reality. When He stops the play by discontinuing the Anhadnaad, the metamorphism begins from SARGUNA to NIRGUNA causing everything made of particles to disintegrate and disappear at the speed of light.

ਜਹ ਅਚਲ ਅਛੇਦ ਅਭੇਦ ਸਮਾਇਆ॥ਉਹਾ ਕਿਸੇ ਬਿਆਪਤ ਮਾਇਆ॥[15]

When devoid of waves, devoid of fundamental particles; the Invariant One was self-absorbed. Then who was swayed by Maya (the material Universe)?

Meaning:- When NIRGUNA was absolutely flat or invariant (ਅਭੇਦ) with no waves/ fields (ਅਚਲ) and no fundamental particles (ਅਛੇਦ) then how can there be the physically measureable SARGUNA the Universe (Maya) exists at all.

ਅਚਲ ਮੂਰਤਿ ਅਨਭਉ ਪ੍ਰਕਾਸ ਅਮਿਤੋਜਿ ਕਹਿਜੈ॥[16]

HE who is beyond the realm of Time, produces light from within Himself, the endless ocean of Primordial Energy.

Explanation:-The Fundamental Reality is beyond the realm of Time. HE produces the waves and particles from within Himself as He is the endless ocean of The Supreme Consciousness (The Primordial Energy). It also explains how NIRGUNA metamorphoses Himself into SARGUNA by producing waves and particles (collectively ਪ੍ਰਕਾਸ) from within Himself using His endless reservoir of primordial energy (the supreme consciousness).

Derivation of Equation of Creation of Primary and Secondary Particles:

When Anhadnaad propagates through NIRGUNA, the fabric of NIRGUNA expands by moving forward and relaxes by moving backward. While doing so, the secondary particles which are the part of the fabric of NIRGUNA also move forward and backward in the direction of advancement of the Anhadnaad. This kind of motion of a secondary particle through the fabric of NIRGUNA is called driven damped oscillatory motion in which a particle move in both forward as well as backward directions of the time. The driven damped oscillatory motion of a secondary particle in NIRGUNA is given by the equation:

$m\ddot{x} + r\dot{x} + sx = F_0 e^{i\omega_A t}$ ...... (1)

where 'm' is the mass of the secondary particle

'r' is the resistance offered by NIRGUNA to the secondary particles

'ω_A' is the angular frequency of Anhadnaad

's' is the spring constant of NIRGUNA and x is the displacement of secondary particle in NIRGUNA during its vibratory motion.

$x = Ae^{i\omega_p t}$

$\dot{x} = i\omega_P Ae^{i\omega_p t}$

$\ddot{x} = i^2\omega_P^2 Ae^{i\omega_p t} = -\omega_P^2 Ae^{i\omega_p t}$

By putting these values in equation (1) we get:

$-m\omega_P^2 Ae^{i\omega_p t} + ir\omega_P Ae^{i\omega_p t} + sAe^{i\omega_p t} = F_0 e^{i\omega_A t}$

$(-mA\omega_p^2 + irA\omega_p + sA) e^{i\omega_p t} = F_0 e^{i\omega_A t}$

$A(-m\omega_p^2 + ir\omega_p + s) e^{i\omega_p t} = F_0 e^{i\omega_A t}$

$$A = \frac{F_0}{m\omega_p^2 + ir\omega_p + s} e^{i(\omega_A - \omega_p)t}$$

From the above equation when the frequency of vibratory motion of a secondary particle intermittently (during its cosmic dance in an atom) approaches the displacement resonance frequency (DAR), due to the brakes being applied on the secondary particle in question by electromagnetic potential of the companion secondary particles then the amplitude 'A' of the vibratory motion of the secondary particle become maximum. This maximum displacement amplitude of the vibratory motion of a secondary particle in NIRGUNA in an atom for a given magnitude of force F_0 is known as primary particle. When the magnitude of the force F_0 further increases due to simultaneous action of large number of primary particles, coming from surrounding secondary particles in an atom, on a given secondary particle, say a nucleon captured in a nucleus, the production of the extra large amplitude of vibratory motion of the nucleons occur which lead to the production of not only the wave disturbances but also the localized disturbances in NIRGUNA on both opposite sides of the nucleons having 180 degree phase difference just like what is happening at the centre of origin of the

universe. This is how the secondary particles are being created in pairs of matter and antimatter particles. The only difference between creation of primary and secondary particles is the amount of energy being available for the vibrating parent secondary particle. Only a secondary particle captured in an atom can create the primary and more secondary particles. That is why pair production can't occur in empty vacuum. Also electrons can't create secondary particles because they can't achieve such momentum which is required to produce strong localized disturbances in the fabric of NIRGUNA to produce secondary particles. Creation of secondary particles always occurs inside the nucleus of an atom. It occurs on both sides of the parent secondary particle with 180 degree lag of vibratory motion between the particles being created on forward and reverse side of the parent secondary particle. This is how a secondary particle reproduces other secondary particles in the form of matter/ antimatter pairs with the help of forces being supplied by the primary particles coming from the neighboring secondary particles. These particles exhibit unique vibratory motion which is explained in next section. Due to their vibratory motion, these particles move with the net translational velocity which is very much less than the velocity of Anhadnaad thereby exhibiting a property called mass. Electrons, protons, neutrons and all the other massive particles belong to this category. These particles move forward and backward in time very quickly with very high frequency. That is why they appear to exist in superposition of states of up and down spin. Whenever we measure their state, it comes up either moving forward in time or moving backward in time. The former can be assumed as spin up state while latter is assumed as spin down state of the quantum mechanics or vice versa.

SARGUNA (The Maya or The Universe) is the shadow of the underneath fundamental reality The NIRGUNA. The outcome of the hidden immeasurable processes which occur in NIRGUNA creates the physically measureable SARGUNA. To make it simple we assume there

are two energy regimes viz. Zero Measureable Energy regime (ZME) and Non-zero Measureable Energy regime (NME).

ZME regime represents the zero point energy or vacuum energy which is not measurable because measurement is a relative phenomenon and we need such measuring equipment whose existence in itself must not be dependent on Anhadnaad and that is not possible. In this regime motion is unidirectional in nature from the centre of origin of the universe to all directions away from the centre. The equation of induced motion for the particles moving under the guidance of Anhadnaad, in ZME regime, is as given below:

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\Phi}{m_p}(\omega_A - \omega_p)\right)^{\frac{1}{2}}(Q_1, Q_2 \dots \dots Q_N, t)$$

where Φ is the reduced Anhadnaad constant, ω_A is the angular frequency of Anhadnaad, ω_p is the angular frequency of the induced vibratory motion of secondary particles induced by Anhadnaad. m_p is the mass of secondary particles.

NME regime represents the visible Universe with measureable physical properties. It begins when first atom formed in this universe. Atoms are systematic structures which provide the necessary apparatus for the creation of measureable wave disturbances, with relatively low frequency but higher amplitude than Anhadnaad, through the process of DAR. These wave disturbances are well known as electromagnetic waves. So the first electromagnetic wave (photon) was produced when first atom came into being in the universe. In this regime motion has no particular direction. The equation of motion for the particles in NME regime is given below:

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\hbar}{m_p}(\omega - \omega_0)\right)^{\frac{1}{2}}(Q_1, Q_2 \dots \dots Q_N, t) \quad \dots\dots\dots(2)$$

In this equation all the non-measureable entities of ZME regime are replaced with corresponding measureable ones. Reduced Anhadnaad constant (Φ) is replaced with Reduced Planck constant ($\hbar$), frequency of

Anhadnaad (ω_A) is replaced with frequency of electromagnetic waves (ω) and frequency of secondary particles induced by Anhadnaad (ω_p) is replaced by frequency of secondary particles induced by electromagnetic waves (ω_0).

Induced/ Guided Motion of a Secondary Particle

When Anhadnaad moves through NIRGUNA the fabric of NIRGUNA compresses by moving forward and relaxes by moving backward. While doing so, the secondary particles which are the part of the fabric of NIRGUNA also move forward and backward in the direction of propagation of the Anhadnaad. This kind of motion of a secondary particle through the fabric of NIRGUNA is called driven damped oscillatory motion in which a particle moves in both forward as well as backward directions of time. During this vibratory motion, a secondary particle move forward and backward in time again and again by the Anhadnaad wave fronts to repeat the same action again and again having net displacement of the mean position of vibratory motion of the secondary particles always forward in time because the time period of Anhadnaad is shorter than the time period of vibratory motion of any of the secondary particles in NIRGUNA. In other words the mean position of the vibrating particle keeps on moving forward in time. The induced translational motion of a secondary particle is given by the following equation:

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\Phi}{m_p}(\omega_A - \omega_p)\right)^{\frac{1}{2}}(Q_1, Q_2 \dots \dots Q_N, t)$$

Where Φ is the reduced Anhadnaad constant ($\phi/2\pi$) having same units as that of Planck's constant. m_p is the mass of a secondary particle, ω_A is the angular frequency of Anhadnaad, ω_p is the angular frequency of a secondary particle which is always less than the ω_A.

Deriving Guiding Wave Equation for the free secondary particle

Every particle is receiving its energy from the vibrating NIRGUNA. All secondary particles use some part of this energy for their translational motion and the remaining part of this energy is used by the particles for its unique vibratory motion to produce their respective particle waves in NIRGUNA through which they interact with other secondary particles. Suppose there is a secondary particle in a medium (NIRGUNA). A spherical guiding wave causes the vibration in the medium to set the medium in vibratory motion which in turn set the particle in question into an induced vibratory motion in such a way that it is having net displacement in the direction of propagation of the guiding wave because the frequency of vibratory motion of flat NIRGUNA is always higher than the frequency of the induced vibratory motion of any of the secondary particle in NIRGUNA.

Total energy received by the particle= Vibrational Energy of the particle+ Effective Translational Energy of the particle
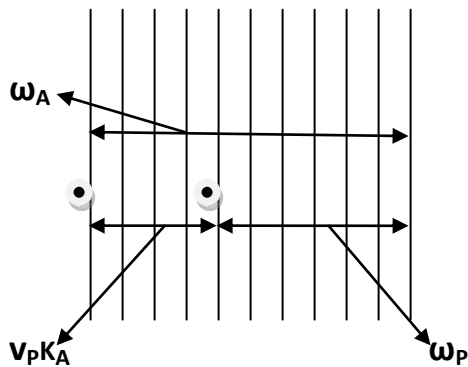
$$\Phi\omega_A = \Phi\omega_P + TE$$

$$TE = \Phi(\omega_A - \omega_P)$$

$$\frac{1}{2}m_p v^2 = \Phi(\omega_A - \omega_P)$$

$$v^2 = \frac{2\Phi}{m_p}(\omega_A - \omega_p)$$

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\Phi}{m_p}(\omega_A - \omega_p)\right)^{\frac{1}{2}}(Q_1, Q_2 \dots \dots Q_N, t)\dots\dots\dots(1)$$

Also, When a secondary particle is moved by the guiding Anhadnaad waves,

Its frequency and velocity is given by:

$$\omega_A = \omega_p + V_p K_A$$

$$\omega_A - \omega_p = V_p K_A$$

Putting the value of $(\omega_A - \omega_p)$ in the equation of induced motion we get:

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\Phi}{m_p}(V_p K_A)\right)^{\frac{1}{2}}$$

Where V_P is the velocity of the secondary particle and K_A is the angular wave number of Anhadnaad.

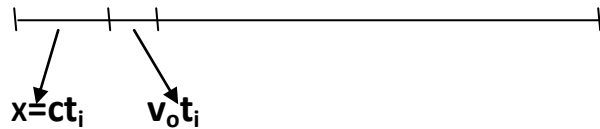Squaring both sides, we get David Bohm like equation:

$$V_p{}^2 = \frac{2\Phi}{m_p}(V_p K_A)$$

$$V_p = \frac{2\Phi}{m_p}(K_A)$$

$$\frac{\partial Q_p}{\partial t}(t) = \frac{2\Phi}{m_p}Im\left(\frac{\nabla\Psi}{\Psi}\right)(Q_1, Q_2 \dots \dots Q_N, t)\dots\dots\dots(2)$$

Particle waves of each and every secondary particle interact with its surrounding particles in the same fashion as Anhadnaad interact with secondary particles as per the equation of induced motion. Quality of interaction between any two or more secondary particles is always invariant or fixed, no matter whatever is the distance between them whether it is multiple of the wavelengths or not. The reason is the invariant velocity of particle waves in NIRGUNA.

Equation of Induced Motion without the involvement of mass of a particle:

$$x = ct_i \qquad v_0 t_i$$

X = ct_i (the net forward displacement, a secondary particle have, after each cycle of vibratory motion)

t_o = time period of natural vibration of the particle

t_A = time period of Anhadnaad

t_P = modified time period of a particle vibrating under the influence of an external periodic force caused by the guiding wave/ Anhadnaad

v_o = velocity of vibrating particle

v_p = Effective translational velocity of vibrating particle

$t_A < t_p < t_o$

$t_P = t_A + t_i$

$t_o = t_p + ct_i/v_o$ .... (3)

$t_o = t_A + t_i + ct_i/v_o$

$t_i = t_o - t_A - ct_i/v_o$

$t_i = t_o - t_A - x/v_o$

Multiplying both sides with c, we get

$ct_i = ct_o - ct_A - cx/v_o$

from (3)

$x = c(t_p + x/v_o) - ct_A - cx/v_o$

$x = ct_p + cx/v_o - ct_A - cx/v_o$

$x = ct_P - ct_A$

$x = c(t_P - t_A)$

$x = c(\frac{1}{\omega_P} - \frac{1}{\omega_A})$...............(4)

The above equation (4) gives the net displacement in each cycle of vibratory motion of the particle in the direction of propagation of guiding waves. By multiplying the net displacement with frequency of vibratory motion of the particle, we get the velocity of the particle as given below:

$V_P = c(1 - \frac{\omega_P}{\omega_A})$.................(5)

Mass as a Transient Property

From equation (1) we get,

$v^2 = \frac{2\Phi}{m_p}(\omega_A - \omega_p)$

$m_p = \frac{2\Phi}{v^2}(\omega_A - \omega_p)$............(6)

The above equation gives the measure of a new property of a particle moving at the speed smaller than the speed of light due to its unique vibratory motion. This newly acquired property is called mass which is a transient property that depends upon the speed of the particle.

Light (EM waves)

The Anhadnaad/ particle waves have downward energy gradient as we move away from the center of their origin. Whenever a secondary particle, through the process of DAR, produces wave fronts having extra large amplitude, a primary particle comes into being. EM waves are always produced by two or more interacting secondary particles in an atom. When two or more secondary particles interact through particle waves in an atom, they either repel or attract each other through a process explained in next section. During that process these interacting particles produces a secondary vibration in each other which occurs perpendicular to the direction of primary vibration of interacting secondary particles. These combined waves with two components perpendicular to each other are called electromagnetic waves. Free moving particles can't produce EM waves (they can only produce particle waves). Atoms of every object are radiating energy in the form of electromagnetic waves all the time. When the speed of the cosmic dance of electrons around the nucleus increases, the frequency of occurrence of DAR also increases, resulting into increase in frequency of the emission of the radiation.

Not only electrons but also protons and neutrons release energy through the process of DAR. Stars, being very massive compared to the planets, move comparatively very slowly, through NIRGUNA, away from the centre of origin of the universe. Due to this, their subatomic particles dance comparatively very rapidly in their respective atoms (because reduction in translational speed of heavenly bodies away from the origin of time results in speeding up of the cosmic dance of the sub-

atomic particles they are made of) which results into very high frequency occurrence of DAR. That is why stars shine and produce very high frequency radiations. The same phenomenon occurs during the explosion of hydrogen bomb in which nuclear fission is used as energy source to speed up the dance of nucleons of deuterium or tritium around each other to produce very high frequency radiations which has nothing to do with so called energy mass inter conversion.

Why Secondary Particles attract and repel each other

When a particle vibrates, it produces a field all around itself by producing particle waves in all directions. When this field encounters another field/ fields produced by some other secondary particle/ particles then an interaction occurs between them as follows:

1. Each and every secondary particle exhibit two distinct motions in NIRGUNA. The primary motion induced by the Anhadnaad which move particles away from the centre of origin of the universe and the secondary motion is induced by the particle waves coming from other surrounding secondary particles which have no particular direction.
2. Particle waves of interacting particles go through each other without any interaction.
3. When a particle is all alone it produces particle waves in all direction with equal force and go nowhere as for as secondary motion is concerned. But whenever it interacts with any other secondary particle, they exhibit secondary motion as well along with primary motion explained in point 4 and 5.
4. When two or more secondary particles interact with each other which are in phase with each other then the particle waves coming from the interacting particles induce the

secondary motion in each other, as per the equation of induced motion explained above, which is perpendicular to the primary motion of the interacting particles and the interacting particles begin to move away from each other.

5. When two particles interact with each other which are having phase difference with each other then the secondary vibratory motion they produce in each other also have the same phase difference with each other. This difference in phase does not allow these interacting particles to produce particle waves with equal force in all directions. Whenever the secondary particle tends to produce particle waves in NIRGUNA, the coming particle waves from the interacting particle creates the imbalance of forces around the particle in question by interfering with the vibratory motion of the particle with which it is producing the particle waves in all direction. Now both of these particles begin to produce the particle waves with less force in between each other compare to the directions away from each other which lead to the attraction between them towards each other. If phase difference is 180 degrees then they ultimately collide with each other which occur in case of matter and anti matter particles. But when phase difference is less than 180 degrees then interacting particles dance around each other at a particular distance where attractive and repulsive forces between them balance each other. This is how an electron is captured in an atom by a proton or nucleus. Higher the phase difference between

the vibratory motions of the two interacting particles higher will be the force of attraction between them.

Entanglement and Quantum Spin

All the particles of this universe are governed by their mother guiding waves. The secondary Particles, which interact with each other through particle waves, stay entangled with each other. Entanglement is the proof that the phase difference between two interacting secondary particle remains invariant whatever the distance between them. Einstein considered the entanglement as 'the spooky action at a distance'. He was right because no communication is required for the entanglement to takes place. It is just the outcome of the way our universe exists. Communication, faster than light, is not possible at all. Measuring entanglement between two photons, moving in opposite directions, originating from single common source, is very easy because photons remain in same state all the time. There is no such phenomenon of quantum spin for photons. But on the other hand, all the secondary particles move forward and backward in time during their vibratory motion and tend to have two different states which rapidly follow each other in such a way that we are unable to observe them and this inability gives rise to the consideration that a secondary particle is always in both states at any instance of time and only reduces to its single state when we measure the system. It measures either as spin up or as spin down depending upon the timing of their measurement. In fact the phenomenon of superposition is the result of our inability to measure and understand the hidden physics which governs the subatomic realm. This all depend upon the setup of our measuring equipments. For example if we setup our measuring equipment in such way that there is no time lag or a time lag equal to one complete cycle of guiding wave between two so called simultaneous events of measurements, then every time we tend to measure the state of two entangled electrons instantaneously, it will always be either spin up or spin down for both the electrons. But if there is a time lag of half the cycle of the guiding wave then if the first electron will be measured as spin up the other one will always be measured as spin down or vice versa. This co-relation of the outcomes of measurement of states of two interacting secondary particles is considered as quantum entanglement.

Wave Particle Interaction: The Explanation of UV Catastrophe in Black Body Radiation Experiment and Photoelectric Effect without considering Quantum Hypothesis:

Classical Mechanics can't explain the Black Body Radiation spectrum over all frequency ranges. In ultraviolet range of spectrum, the experimental results did not match the theory.

$$dp\,(v,t) = 8\pi K_B Tv/c^3$$

The above mathematical equation, based on classical mechanics, predicts the infinite range of high frequency radiations to be emitted as the temperature of the black body rise continuously. But the experiment shows contradictory results as radiant energy density suddenly falls in ultraviolet range of spectrum instead of rising as per the equation based on classical mechanics. This is called UV catastrophe.

Similarly in case of Photoelectric Effect, considering light as a wave in classical mechanics, the classical explanation was that the incident light oscillates the electrons of the metal surface and increase the kinetic energy of the electrons which depends upon the intensity of incident light. However the experimental results show that the ejection of electrons is independent of the intensity of incident radiation. Rather it depends upon the frequency of the incident radiation. If the frequency of the incident radiation is below the given threshold level then no electron ejects, no matter how intense the incident radiation is.

Both these problems are resolved afterwards using Quantum Hypothesis by Max Planck and Albert Einstein respectively. But these two problems of classical mechanics could be resolved without considering the quantum hypothesis if we consider the motion of subatomic particles as visualized in ANEF theory of universe. As per ANEF theory we have two Energy Regimes viz. Zero Measureable Energy (ZME) Regime and Non-Zero Measureable Energy (NME) Regime. Electromagnetic radiations fall in NME regime. These radiations vibrate the NIRGUNA (medium) and the secondary particles which are the localized disturbances in the fabric of NIRGUNA also vibrate along with NIRGUNA and exhibit translational motion as per the equation of motion applicable to NME regime given below:

$$\frac{\partial Q_p}{\partial t}(t) = \left(\frac{2\hbar}{m_p}(\omega - \omega_0)\right)^{\frac{1}{2}}(Q_1, Q_2 \dots \dots Q_N, t) \dots\dots\dots(2)$$

The above equation is exactly similar to the equation which was used by Albert Einstein for describing the photoelectric effect but totally in different perspective. In ANEF theory the same equation can be used to explain both the Ultraviolet Catastrophe and Photoelectric Effect without considering the Quantum Hypothesis. In fact by using the above equation these two problems of classical mechanics will become complementary for each other in finding the solution of each other. As far as photoelectric effect is concerned, if the frequency of incident electromagnetic radiation is less than or equal to the frequency of vibratory motion of electron in NIRGUNA i.e. $\omega <= \omega_0$ the additional translational velocity of the electron induced by the incident electromagnetic radiation will be zero or negative. It means the state of motion of the electron remains unchanged. But if $\omega > \omega_0$ then the additional translational velocity of the electron induced by the incident electromagnetic radiations will have non-zero positive value which will definitely change the state of motion of the electron and if the kinetic energy of electron exceeds the work function of the material in question the ejection of electrons takes place which exhibits the photoelectric effect. It exactly explains why the phenomenon of photoelectric effect depends only upon the frequency of incident light. The intensity of incident radiations, which depends upon the amplitude, has no effect on the occurrence of photoelectric effect until the frequency of incident radiation remains below the frequency of vibratory motion of electron in NIRGUNA but when it crosses the frequency of vibratory motion of electron in NIRGUNA then the intensity of incident electromagnetic radiations (higher the intensity higher will be the amplitude of the electromagnetic radiations) also become important because higher the magnitude of displacement amplitude of the vibratory motion of electron higher will be the induced translational velocity of the electron. This is the reason why kinetic energy of electrons increases with increase in intensity of the incident radiations having frequency above the threshold level. This is also the reason why Anhadnaad, which have the highest possible frequency, can't eject the electrons from the pull of nucleus because the amplitude of Anhadnaad is very small compared to the amplitude of the primary particles (electromagnetic waves).

Exactly similar phenomenon occurs during the ultraviolet catastrophe in a black body radiation experiment where the radiant energy density increases as the temperature of the black body increases continuously until the ultraviolet range of the spectrum where it begins to decline instead of increasing which is contradictory to the theoretical equation of radiant energy density of the black body radiations based on classical mechanics.

Explanation:-The temperature of a body increases as the amplitude of the vibratory motion of electrons of that body increases. As per Wien's Displacement Law the frequency of emitting radiations keep on increasing with increase in temperature of the body in question. When the frequency of radiations being emitted from the body reaches UV range of spectrum, the kinetic energy of the electrons of the body in question exceeds the work function of that body which leads to the ejection of electrons from the atoms of the body. This phenomenon brings the sudden decline in radiant energy density of that body in

UV range of spectrum. This is how UV catastrophe occurs in black body radiation experiment. Due to very high temperature of the body a proper flow of electric current couldn't occur as high temperature prohibits the same. It is not the coincident that work function of all the elements fall in UV range of spectrum when calculated by using the equation given by Albert Einstein i.e. $\phi = hf_0$. The work function of all the elements ranges between 1.9 to 6.0 eV (electron Volt) which fall in UV range of spectrum. The work function of carbon black used in black body experiment is 4.81 eV (electron Volts) which corresponds to the frequency of 1.1630529×10^{15} s^{-1} (falls in UV range). We can calculate the corresponding frequency of work function of any material by using the photoelectric effect equation given below:

E = hf – ϕ (work function)

where "E" is the Translational Kinetic Energy of ejected electron, "f" is frequency of incident electromagnetic radiation and ϕ is work function of black body material which is given by the following equation : $\phi = hf_0$

Classical Mechanics made a mistake to assume the motion of particles as linear and Quantum Mechanics did the necessary modifications to get the near correct results with the help of probabilistic mathematics without considering the actual nature of motion of the particles. That is why Einstein said that Quantum Mechanics presents the incomplete picture of reality, there must be some hidden variables underlying the Quantum Mechanics.

Conclusion and Discussion

1) Creation of universe is a continuous process in which the universe is either continuously being created or continuously being destroyed through Anhadnaad by the Supreme Fundamental Reality.
2) We can create (not invent) even bigger zoo of particles. There is no limit at all and it all depends upon the amount of energy available at the time of pair production.
3) Only secondary particles can reproduce primary as well as more secondary particles through the process of DAR.
4) Time travel is not possible for the bodies made of particles.
5) Faster than light communication is not possible. Entanglement is mere the outcome of the way our universe works.
6) Secondary particles can move at the speed very close to the speed of light but not at the speed of light. When the speed of a secondary particle approaches more and more close to 'c' it's mass and charge approaches more and more close to zero due to the reduction in frequency of its vibratory motion.
7) When a secondary particle approaches very close to the speed of light its mass as well as charge approaches more and more close to zero. That is why energy required to further accelerates the charged particle, through electromagnetic field, approaches to infinity. A nearly charge less secondary particle require nearly infinite energy to accelerate it further any more.
8) Gravity is the second order interaction between secondary particles which occur through particle waves just like electromagnetic interaction (the first order interaction). It is the residual effect of electromagnetism.
9) Universe is either being created or being destroyed by the Supreme Consciousness of Fundamental Reality through Anhadnaad. When He discontinuous Anhadnaad the Universe begins to disappear from the centre of origin towards the peripheries at the speed of light.
10) All the galaxies are moving away from the centre of origin of the Universe/ Time by Anhadnaad. As the energy being supplied per unit area by Anhadnaad is reducing as we move away from the centre of origin, the

cosmic dance of the sub-atomic particles, from which these galaxies are made of, is also slowing down. That is why the spectrum of electromagnetic radiations coming from all the galaxies is shifting red. There is nothing like so called expansion of space happening at all. That is why even the spectrum of radiations coming from Sun is shifting red.

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