

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 scene. 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 it 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 continuation or discontinuation of Anhadnaad respectively 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. 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 equation given in the paper which also explains the Ultraviolet Catastrophe in Black Body Radiation Experiment and Photoelectric Effect without considering the quantum hypothesis.

Keywords: -NIRGUNA, SARGUNA, Anhadnaad, DAR (Displacement Amplitude Resonance), Primary/Secondary Particles.

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INTRODUCTION

As per 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. It 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

Ik=oa'nkār saṭ nām kartā purakhḥ nirbhā=ō nirvair akāl mūrāṭ ajūnī saibhā'n gur parsād.

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:-Ik = There is only One Formless Fundamental Reality

Oa'nkār = WHO metamorphoses into Universe (kār "the process of metamorphism") with the onset of Primal Vibration called Anhadnaad (Oa'n).

HIS 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 ਆਪ॥ ਆਪਨ ਕੀਆ ਨਾਨਕਾ ਆਪੇ ਹੀ ਫਿਰ ਜਾਪਿ॥²

Sargun nirgun nirankār sunn samādhi āp. Āpan kī=ā nānkā āpe hī fir jāp.

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).

ਜਬ ਨਿਰਗੁਣ ਪ੍ਰਭ ਸਹਜ ਸੁਭਾਇ॥ ਤਬ ਸਿਵ ਸਕਤਿ ਕਹਹੁ ਕਿਤੁ ਠਾਇ॥³

Jab nirgun parabhḥ sahj subhā=e. Tab siv sakaṭ kahhu kiṭ thā=e.

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

Explanation:-When The Supreme Formless Fundamental Reality 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 in the absence of Anhadnaad during the 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 monochromatic spherical wave.



It propagates as monochromatic spherical wave in all directions away from the centre of its origin at the speed of $2.99792458 \times 10^8 \text{ ms}^{-1}$ producing a hidden energy field called Anhad Naad Energy Field (ANEF) having phase difference of 180 degree between opposite sides i.e. forward and backward direction of its propagation. Frequency of Anhadnaad is beyond our ability of measurement and is the 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॥⁴

Kītā pasāo eko kavāo. Fis tē hoē lakh dārīāo.

You created the vast expanse 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 of heavenly bodies (galaxies).

ਪਸਰਿਓ ਆਪਿ ਹੋਇ ਅਨਤ ਤਰੰਗ॥ ਲਖੇ ਨਾ ਜਾਹਿ ਪਾਰਬ੍ਰਹਮ ਕੇ ਰੰਗ॥⁵

Pasriō āp hoē anāt tarang. Lakhe na jāhi pārbarahm ke rang.

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॥ ਤਿਸੁ ਭਾਵੈ ਤਾ ਏਕੰਕਾਰੁ॥⁶

Āp satī kīā sabhū satī. Fis parabhū tē saglī utpatī. Fis bhāvai tā kare bīsthār. Fis bhāvai tā ekankār.

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 ਬੀਚਾਰ॥ ਓਨਮ ਅਖਰੁ ਤ੍ਰਿਭਵਣ ਸਾਰੁ॥⁷

Oankār barahmā utpatī. Oankār kīā jin chitī. Oankār sail jug bhāe. Oankār bed nirmāe. Oankār sabaḍ udhre. Oankār gurmukhū tare. Onam akhar sunhu bīchār. Onam akhar taribhavan sār.

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

Explanation:-From Oa'nkār, The Primal Vibration (Anhadnaad), GOD created the universe. Oa'n is omnipresent in the universe. A Oa'nkār created Matter (ਸੈਲ) and Time (ਜੁਗ). Oa'nkār created entire knowledge of the Universe (ਬੇਦ). Oa'nkār created the words (languages) to collect the divine knowledge for the salvation of humanity. Oa'nkār 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॥⁸

Nām ke dḥāre sagle jant. Nām ke dḥāre kḥand barahmand. Nām ke dḥāre simriti bed purān. Nām ke dḥāre sunan gi-ān dḥi-ān. Nām ke dḥāre āgās pātāl. Nām ke dḥāre sagal ākār.

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॥⁹

Sach kḥand vasai nirankār. Kar kar vekḥai naḍar nihāl. Fithai kḥand mandal varbḥand. Je ko kathai ṭa ant na ant. Fithai lo=a lo=a ākār. Jiv jiv hukam ṭivai ṭiv kār. vekḥai vigsai kar vichār. Nānak kathnā karrā sār.

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.

Assumptions of the Theory

1. **NIRGUNA** is continuous in nature who metamorphoses Himself into SARGUNA (the One having waves and particles) through the action of primordial energy in the form of primal vibration called Anhadnaad.
2. **Anhadnaad** is a monochromatic spherical wave in NIRGUNA which originates from a random point source in NIRGUNA and behaves as monochromatic plane wave as we are billions of light years away from its origin.
3. A **Field** is a wave disturbance in the fabric of NIRGUNA which expands spherically in all directions at the speed of light
4. A **particle**, more specifically, a **secondary particle** is a localized disturbance in the fabric of NIRGUNA which always spawn along with the wave disturbance (the guiding wave) and are

movable in NIRGUNA through a peculiar vibratory motion induced by the Anhadnaad/ particle waves as per the equation of motion given in the paper.

5. **Guiding waves** (Anhadnaad/ Particle waves) never interact with each other. They only cause disturbance in the medium (NIRGUNA) which results into motion of secondary particles as per the equation of motion given in the paper.

Disturbances in the fabric of NIRGUNA can be categorized in 3 categories:

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.

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 the guiding waves as per the equation of induced motion given in the paper.

Particle Waves

Particle waves are produced by all the secondary particles in NIRGUNA through their vibratory motion induced by the mother guiding wave. These waves constitute the fields around the particles. These are analogous to the Anhadnaad originating from the centre of origin of the universe. 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 ਲੇਖ ਭਿ ਤੂ ॥ ਏਕੋ ਕਹੀਐ ਨਾਨਕਾ ਦੁਜਾ ਕਾਹੇ ਕੂ ॥¹⁰

Āpe patī kalam āp upar lekḥ bhē tūn. Ēko kahī=ai nānkā dūjā kāhe kū.

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 ਖਿਚੇ ਢਹਿ ਢੇਰੀ ਹੋਇ ॥¹¹

Āpe sūt āpe baho maṇī=ā kar saktī jagat̄ paro=e. Āpe hī sūt=ḍhār hai pi=ārā sūt̄ khinche ḍhēh ḍherī ho=e.

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.

ਜਹ ਅਫਲ ਅਛੇਦ ਅਭੇਦ ਸਮਾਇਆ ॥ ਉਹਾ ਕਿਸੇ ਬਿਆਪਤ ਮਾਇਆ ॥¹²

Jah achhal achhed abhed samāiā. Ūhā kisēh biāpaṭ māiā.

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 (ਅਫਲ) and no fundamental particles (ਅਛੇਦ) then how can there be the physically measureable SARGUNA the Universe (Maya) exists at all.

DERIVATION OF EQUATION OF CREATION OF PRIMARY AND SECONDARY PARTICLES

When Anhadnaad propagates through NIRGUNA, the fabric of NIRGUNA stretches 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, induced by Anhadnaad acting as periodically varying force, through the fabric of NIRGUNA is called driven damped oscillatory motion in which a particle moves forward as well as backward direction of the propagation of Anhadnaad. The driven damped oscillatory motion of a secondary particle in NIRGUNA is given by the equation:

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

Here 'm' is the mass of the secondary particle

'r' is the resistance offered by the continuous fabric of NIRGUNA to the induced motion of secondary particles through NIRGUNA

' 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.

$F_0 e^{i\omega_A t}$ is the periodically varying force being provided by Anhadnaad.

$$x = A e^{i\omega_p t}$$

$$\dot{x} = i\omega_p A e^{i\omega_p t}$$

$$\ddot{x} = i^2 \omega_p^2 A e^{i\omega_p t} = -\omega_p^2 A e^{i\omega_p t}$$

Here ω_p is the angular frequency of secondary particle induced by Anhadnaad. 'A' is the maximum amplitude of displacement of secondary particle.

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

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

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

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

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

Frequency of vibratory motion of a secondary particle remains invariant until it interacts with one or more other secondary particles. During interaction the frequency of two or more interacting secondary particles varies continuously as they tend to decelerate the natural speed of each other by applying attractive or repulsive forces on each other through their respective particle waves. 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 Amplitude Resonance (DAR) frequency, due to the brakes being applied on the secondary particle in question by electromagnetic potential of the companion secondary particles in an atom 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 displacement 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 sides of the nucleons having 180 degree phase difference with each other just like what is happening at the centre of origin of the universe, a secondary particle comes into being. 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 can be assumed as spin down state of the quantum mechanics or vice versa.

ENERGY REGIMES

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:

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

Here 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.

The above equation can never be solved as it falls under ZME regime where nothing can be measured. We can never measure:

1. the frequency of Anhadnaad (ω_A)
2. the magnitude of Anhadnaad Constant (Φ) which is actually continuously reducing as we move away from the origin of Anhadnaad

NME regime represents the 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. *The first electromagnetic wave (photon) was produced when first atom came into being in the universe. CMB (Cosmic Microwave Background) radiation is the first light being produced continuously from the region where first set of atoms are continuously being created.* In this regime motion has no particular direction. The equation of motion for the particles in NME regime is given below:

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

In this equation all the non-measurable 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 stretches 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 guiding wave 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 secondary particles

Every particle is receiving its energy from the NIRGUNA pulsating under the influence of Anhadnaad. 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 set the medium in pulsating 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 = Vibration Energy of the particle + Effective Translational Energy of the particle

$$\Phi\omega_A = \Phi\omega_p + TE$$

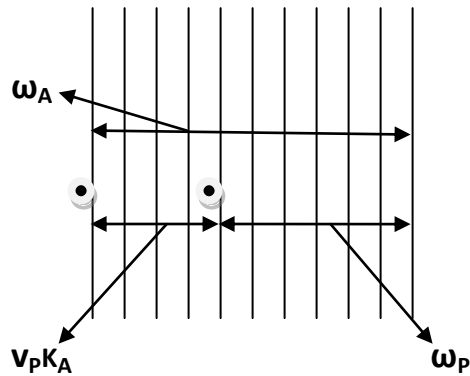
$$TE = \Phi(\omega_A - \omega_p)$$

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

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

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

When a secondary particle moves 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 used in *Pilot Wave Theory*:

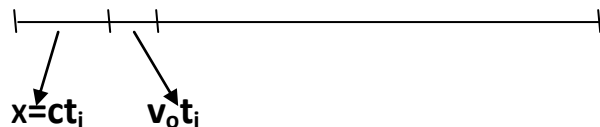
$$V_p^2 = \frac{2\Phi}{m_p} (V_p K_A)$$

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

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

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.

Equation of Induced Motion of free secondary particle without the involvement of mass:



$X = ct_i$ (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

$$t_A < t_p < t_o$$

$$t_p = t_A + t_i$$

$$t_o = t_p + ct_i/v_o \dots\dots\dots (3)$$

$$t_o = t_A + t_i + ct_i/v_o$$

$$t_i = t_o - t_A - ct_i/v_o$$

$$t_i = t_o - t_A - x/v_o$$

Multiplying both sides with c , we get

$$ct_i = ct_o - ct_A - cx/v_o$$

From (3)

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

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

$$x = ct_p - ct_A$$

$$x = c(t_p - t_A)$$

$$x = c\left(\frac{1}{\omega_p} - \frac{1}{\omega_A}\right) \dots\dots\dots(4)$$

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:

$$V_p = c\left(1 - \frac{\omega_p}{\omega_A}\right) \dots\dots\dots(5)$$

WHY SECONDARY PARTICLES ATTRACT AND REPEL EACH OTHER

When a particle vibrates, it produces a field all around itself by producing monochromatic spherical 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. Secondary particles exist as localized disturbances in the continuous fabric of NIRGUNA. Higher the amount of instantaneous energy available at the time of their production higher is the size of localized disturbance in the fabric of NIRGUNA. Proton is comparatively larger disturbance in NIRGUNA than electron is. Larger disturbances travel slowly than smaller ones under the

influence of same periodic force being produced by Anhadnaad/ particle waves. Due to slow translational speed the larger particles vibrate at higher frequencies than the smaller ones for the same reason.

2. 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.
3. Particle waves of interacting particles as well as Anhadnaad go through each other without any interaction at all. These waves only are the disturbance in medium (NIRGUNA) which induce motion in secondary particles as per the equation of motion given above.
4. When a particle is all alone it produces monochromatic spherical waves which expand in all directions with equal force and the particle in question goes nowhere as far as secondary motion is concerned. But whenever it interacts with any other secondary particle, the particle waves coming from that particular particle interferes with the ongoing vibratory movement of the particle in question which causes imbalance of forces around the particle in question that leads to secondary motion of the particle in question along with its primary motion.
5. When two or more equal sized secondary particles interact with each other they remain in phase with each other by virtue of having invariant size and common guiding wave called Anhadnaad. Being in phase with each other, the particle waves coming from these particles are also in phase with the vibratory movements of these particles which induce the secondary motion in each other as per the equation of induced motion explained above and the interacting particles begin to move away from each other in the direction of particle waves coming from each other. This is how the particles of invariant size repel each other.
6. When two unequal sized particles interact with each other, their vibratory movements in NIRGUNA tend to have phase difference with each other due to their unequal frequencies. Their particle waves also tend to have the same phase difference with the vibratory movements of each other in NIRGUNA. This difference in phase does not allow these interacting particles to produce particle waves with equal force in all directions which results into onset of secondary motion in both of the interacting particles. Whenever the secondary particle tends to produce particle waves in NIRGUNA, the coming particle waves from the other interacting secondary particle creates the imbalance of forces around the particle in question by interfering with the vibratory movement of the particle in question with which it is producing the particle waves in all direction. Now both of these particles begin to exert less force in the direction towards each other compared to all other directions away from each other which lead to the motion of these particles towards each other as per the Newton's 3rd law of motion. This is how a proton captures an electron to form an atom. Higher the phase difference between the vibratory motions of the two interacting particles higher will be the force of attraction between them.

WHAT HAPPENS IN AN ATOM?

First atom formed when a proton captured an electron. Imagine a free electron and a free proton is moving under the influence of Anhadnaad only i.e. without interacting with each other through their particle waves. They will have individual uniform motions in which the electron will gain comparatively larger amplitude of displacement in each cycle of its vibratory motion than the proton because the proton being larger in size than the electron feels comparatively larger resistance while moving through the fabric of NIRGUNA. Due to this the electron tends to have comparatively higher speed than the proton. On the other hand proton tends to have comparatively higher frequency of its vibratory motion than the electron for the same reason. Now imagine both begin to interact with each other through their particle waves. There will be a force of attraction between them as explained in previous section. When these particles come very close to each other during attraction, the frequency of their particle

waves become invariant for a very small instance of time due to their invariant speeds (caused by the deceleration being applied by the forces of attraction between them) which results into total repulsion between them as explained in previous section. When the electron starts moving away from the proton due to repulsion, the difference between the frequencies of their particle waves again builds up (due to their unequal speeds after repulsion) to bring them again close to each other. This process never ends and the electron remains captured in an atom without falling into its nucleus. This interaction between electron and proton can be termed as cosmic dance of sub-atomic particles which is happening everywhere in this universe. During this cosmic dance the frequency of vibratory motion of electron keeps on changing all the time. Whenever its frequency matches the DAR (Displacement Amplitude Resonance) frequency, an extra large amplitude wave front of the particle waves is produced which is known as primary particle whose frequency of occurrence is called the frequency of emission of electromagnetic radiation by an atom.

Photoelectric Effect

As per the equation of induced motion of secondary particles

1. if the frequency of incident electromagnetic radiation is less than or equal to the induced frequency of electron in NIRGUNA then no extra translational motion will be induced in the electron in any direction by the incident electromagnetic radiation.
2. If the frequency of incident electromagnetic radiation is higher than the induced frequency of electron in NIRGUNA then the translational velocity of the secondary motion of electron will become non zero and its magnitude will depend upon how much the frequency of incident radiation is higher than the natural frequency of electron in NIRGUNA. If the kinetic energy of the induced secondary translational motion of electrons in the direction of incident radiation is higher than the work function of the element containing those electrons then the ejection of electrons will take place. It exactly explains why the phenomenon of photoelectric effect depends only upon the frequency of incident radiation. Intensity of electromagnetic radiation, which depends upon the amplitude, has no effect on the occurrence of photoelectric effect because whatever the magnitude of displacement amplitude of secondary vibratory motion of electron in NIRGUNA may be its time period remains same which can't induce the non-zero translational velocity of secondary motion in electrons as per the equation of induced motion of secondary particles given above. Intensity of incident radiation becomes important only when the frequency of incident radiation crosses the threshold frequency of the element in question.

Ultraviolet Catastrophe

In a black body radiation experiment the radiant energy density increases as the temperature of the black body increases continuously until the ultraviolet range of spectrum where it begins to decline which is contradictory to the theoretical equation of radiant energy density based on classical mechanics.

When a body is given heat energy, its internal energy increases, causing

1. Increase in average amplitude of vibratory motion of its electrons which manifests as increase in temperature of the body.
2. Increase in average frequency of emission (occurrence of DAR) from its surface because the production of primary particles throughout the body is non-synchronous in nature. This phenomenon is well explained by Wien's Displacement Law which states that the frequency of

emission of electromagnetic radiation (frequency of occurrence of DAR) increases as the temperature of a body increases. He gave the following equation:

$$\lambda_{\text{peak}} = b/T$$

Where λ_{peak} is the peak wavelength of emission, 'T' is absolute temperature in Kelvin and 'b' is the constant of proportionality.

This means when the internal energy of a body increases it manifests as increase in temperature of the body as well as increase in frequency of emission from the surface of the body. The relationship between these two parameters remain almost linear until the frequency of emission reaches the ultraviolet range of spectrum where temperature keeps on increasing while the increase in frequency of emission almost stops. The reason is the phenomenon of ejection of electrons from the parent atom which takes place due to increase in translational kinetic energy of the secondary motion of electrons as per the equation of induced motion of secondary particles given above. These ejected electrons, which are vibrating at very high amplitude of displacement due to increase in temperature of the body, undergo very high rate of collision with neighboring electrons which contribute in further increase of temperature of the body. This new process of ejection of electrons from the parent atom halts the ongoing process of continuous increase in frequency of emission from the surface of the black body which results into fall in radiant energy density in UV range of spectrum and beyond because UV range of frequency is higher than the natural induced frequency of electrons in NIRGUNA which leads to non-zero speed of secondary translational motion of electrons in NIRGUNA as per the equation of induced motion of secondary particles. No flow of electric current can be observed as the high temperature inhibits the same.

The work function of carbon black used in black body experiment is 4.81 eV (electron volts) which corresponds to the frequency of $1.1630529 \times 10^{15} \text{ s}^{-1}$ (falls in UV range). We can calculate the corresponding frequency of work function of any material by using Einstein equation of photoelectric effect given below:

$$E = hf - \phi \text{ (work function)}$$

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 equation :

$$\phi = hf_0$$

Threshold frequency (f_0) of all elements fall in UV range and the minor differences are subject to the magnitude of force with which the escaping electrons are held by the atoms of different materials and this is not a coincidence.

Classical Mechanics made a mistake in understanding the actual nature of motion of the secondary particles in NIRGUNA and Quantum Mechanics used the probability mathematics to calculate the average results by invoking its weird counterintuitive concepts. That is why Einstein said that Quantum Mechanics presents the incomplete picture of reality, there must be some hidden variables underlying the probabilistic world of Quantum Mechanics.

LIGHT (EM WAVES)

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 earlier. 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. This combined wave with two components perpendicular to each other is called electromagnetic wave. 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.

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. 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 sub-atomic 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.

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 continuation or discontinuation of 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) Electromagnetism is the first order interaction in NIRGUA which occurs between individual secondary particles and their particle waves while Gravity is the second order interaction in NIRGUNA which occurs between the clusters of secondary particles as a whole and particle waves coming from those clusters of secondary particles as a whole.

- 7) Secondary particles always interact with each other through particle waves and can be forced to accelerate or decelerate while primary particles never interact with each other or with secondary particles directly. That is why they always move at constant speed and can't be forced to accelerate or decelerate.

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