Section A -Research paper

SEARCH FOR ROOT OF MODERN PHYSICS IN VEDA

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ABSTRACT

An attempt has been made to elaborate to search for root of modern physics in Veda. This study typically takes form of descriptive study and secondary data form different research paper and books. Researcher has gone through a number of reports and papers to understand and conclude of emergence .This has the advantage of providing very rich information and avoiding the influence of others on the opinion of anyone individuals. Researcher visited different library, historical places museums of different part of India to collect data. The researcher go through the archeological records. The main aim is to analyze scientific approach of people in Vedic period, to evaluate impact of invention and knowledge of Veda in human life. Researcher also have discussed progression of science in relation to modern science .Researcher pointed out different field of physics such as astrophysics, quantum mechanics, classical mechanics, particle physics, optical physics, electrical physics, atomic physics, acoustics, cosmology of Veda in the light of modern physics. Researcher also tried to find out root of modern physics in Vedic literature.

Keywords: Veda, invention, analyze, root, progression, approach, quantum mechanics, atomic, cosmology, optical

Introduction

Physics is academic discipline or content of knowledge primarily aims for understanding the material phenomena and laws working in nature . like other subject matter of science physics also relay on observation, experimentation as technique for knowledge creation . no doubt modern physics is an academic discipline takes the scientific shape by the contribution of western world such as Aristotle (Greek philosopher), Archimedes (Greek mathematician), Galileo (Italian physicist), Einstein (German theoretical physicist), Heisenberg (German physicist) and many other. But academician have acknowledged the historical perspective of

science in general and physics in particular it means. Though scientific knowledge is primarily based on present time but it has a strong background in the form of history which may be embedded with socio-cultural fabrics , specific reference to the to the Indian culture which is enriched by its Vedic religious scripture **[1]**. No doubt this text has both religious and scientific component in multiple form but no such extensive work has been conducted to explore the knowledge related to physics as academic discipline in the Indian cultural context and its successive development related with modern physics. Indian culture is shaped large extent by Vedic text. Strong evidences are found about various scientific explanation of physical phenomenon in Vedic literature . Vedic text is full of knowledge of materialistic world. Vedic text has different aspect of knowledge. Like modern knowledge system it has different branches. The figure 1 depicted knowledge system in Vedic period. Vedic text has great contribution in physics. Knowledge of Vedic literature can explain incidents and laws of astrophysics, particle physics, Newton's laws of motion ,quantum mechanics, atomic theory, acoustics many other branches of physics. Researcher discussed different branches of physics of Veda in the light of modern physics and also discuss trending of progression of physics in this period (Fig. 1). According to history duration of Vedic period was 1500 B.C to 600 B.C. Main motivation is to find out knowledge cadged in history. According to Salil Gewali" let the truth be given a chance to emerge from the darkness of illusion. The sunshine science should not at all be eclipsed by the cloud of prejudices, hatred, and envy" (Fig. 2) **[2]**.

Fig 1: Knowledge Tree in Vedas

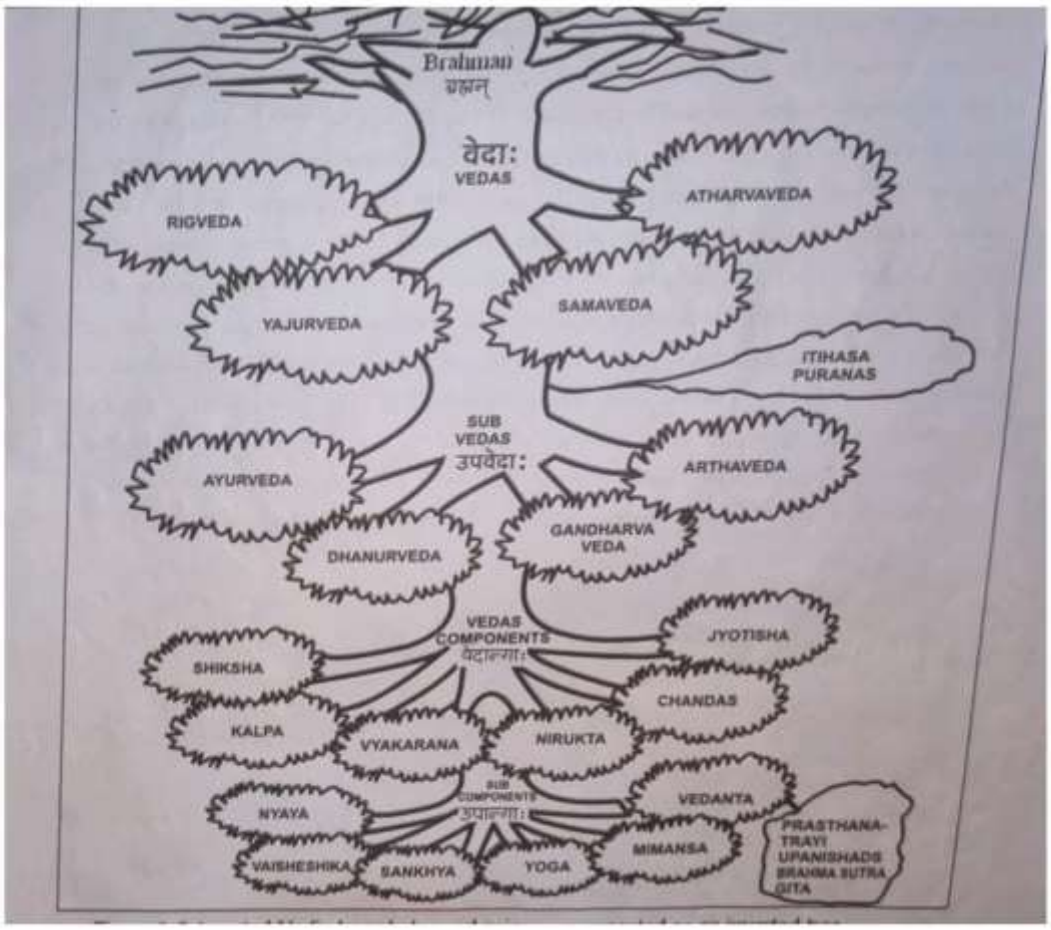

Fig 2. Integrated Vedic Knowledge & Science represented as an Inverted Tree [3]

Astronomy in Vedic Period

At present the concept of astronomy is related to scientific explanation about celestial body and its motion ,revolutionary process, path of movement. **[4]** Veda is the oldest literature based on spirituality but it has also scientific aspect. vednga jyotisa rigveda mentioned that "just like the combs of peacocks and the crest of jewels of serpents, so does jyotisa (astronomy) stand at the head of the auxiliaries of veda" (RV-VG35, Subbarayappa and Sarama, 1985, p 1).

Energy source

"janayma Biswa Bhubayani Tastu.

Tata Khetran Bolomoujat Jatem."

(taittriya Aranyakam-3.11) science in samskrit arup kaul. Existence of world is due to almighty God Sun. all living beings get their strength and energy from Him. which is similar to modern physics. Energy flows through living things with in a eco system by food chain . the sun provide energy directly to plants to produce food. This plants supplies energy in the form of food step by step.

Motion of the planet

Vedic literature clearly explained position and motion of the planet and sun. also discussed about gravitational force and path of the planets.

"mitro dadhar prithvimutadham.

Mitra kusthi" tatriya sanghita 3.4.10.3-4

That means sun is the center of the solar system and have the attractive force, due to this attractive force all the planets and celestial body revolve around it.

"kakhya prati mandalaga bhramanti sarve graha sabcarena.

Mandochadulan pratilome chiaba siggrochat"

Celestial body moves around the sun in an elliptical orbit not in circular .all the planets moves on their own orbit and in the eccentric circles ,anti clockwise from their apogees and clockwise from their perigees.

Concept of satellites

In Rig Veda it was described that the moon revolves as it is the satellite of earth. There was also description of the number of satelites i,e 32 in the solar system and moon is the largest one other are smallest in size than moon. 'ayam gou prushura cromitam asiyudh namana tarang puraha pitoroncho proyemto (rig veda 10.189), taitariya samhita 1.51.3,4

Classical mechanics

Classical mechanics is the most basic part of the physics which deals with the explanation of incidents happens in daily life in materialistic approach. in vedic period mathematical concept was not introduced to explain laws of motion of particles but there approach to explain towards motion of particle was good enough. Achaiya Kanada was a great scientist who wrote motion of a particle and impact of force on particle in his book Vaihesika Sutra **.in modern** physics this particle behavior is defined by Newton's laws of motion but its key point was in the fifth chapter of vaishesika Sutra. There is also concept of gravitational force **[5]**.

1.Frist law ; 'samyogabhave gurutvatnam'(vaihesika sutra of maharishi kanada 5th chapter 1st ahnika) which means without external force an object falls freely due to mass(gurutava) if we compare with the first law of newton we find similarity between them .

Newton's 1st law; an object will be in uniform motion unless external force applied on it **.**

2.**Second law ;** the rate of change momentum of a particle is propotional force applied **on** it.

This approach was first by achariya kanada in his book.' Nodana vishesha abhavat na urdhvam na tiryag gamanam **' if** external force is absent(nodana vishesha) object cannot move any direction.

3.**Third law** ; every action has equal and opposite reaction this is the third law of newton and same law is found in book of kanada in different words but the main concept is similar.

'prayatana-vishesshat nondasa visheshash' i;e particular action has reaction.

Now a days some universities and research institute (Manchester university) accept that newton's laws key was in kanada's book.

Quantum mechanics

Mechanics is the one of the basic part of the physics again mechanics is divided into many parts i;e classical mechanics ,quantum mechanics and statistical mechanics .quantum mechanics mainly deals with the concept of matter with smallest unit such as protron, electron, neutron. .concept of quantum mechanics is found in vedic text not directly as atom or subatom .there thought and worship for god lead them to start the concept of quantum mechanics . modern physicist also get inspiration from vedic literature to explain quantum physics . they also accept and found similarity between modern quantum mechanics and vedic quantum mechanics.

Concept of quantum mechanics started in 1920 by Werener Heisenberg , Niels Bhor and Erin Schondiger. They got key ideas from veda and Sanskrit books on spirituality. Introducing mathematical equation and formula with the thought of veda and Sanskrit slocks such as 'Brahaman','Paramatma' and 'atman' they steped to quantum mechanics. That is why Schrodinger said " some blood transfusion from the east to west to save western science from spiritual anaemia'.in Veda there is concept "all in one" which is similar to wave particle duality concept. In this context Schrodinger said "the unity and continuity of Veda are reflected in the unity and continuity of wave mechanics". Schrodinger , Hisenberg give a concept of universe on the basics of "superimposed inseparable waves of probability amplitudes" which is just same concept of Vedic text " the all in one"(Schrodinger; life and thought- Maine Weltansicht,p.173).

In the book' A life of Erwin Schrodinger' Schrodinger said "Vedanta teaches that consciousness is singular , all happening are played out in one universal consciousness and there is no multiplicity of selves……. The stages of human development are to strive of possession(artha),

knowledge(dharma),ability(kama), being(moksha)…… Nirvana is a state of pure blissful knowledge.it has nothing to do with individual's .the ego or separation illusion. The goal of man is to preserve his karma and to developed further-when man dies his karma lives and creates for itself another carrier."

Hisenberg stated "quantum theory will not look ridiculous to people who read Vedanta" . In 1935 Einstein Prodolsky and Rosen doubted about the existing quantum theory according to them an action is occurs in place have an immediate effect in other side of the universe. The EPR paper states about quantum entanglement changed the world and give a magical significance. Albert Einstein said " when I read the Bhagavad Gita and reflect about how God created this universe everything else so superfluous…… I maintain that the cosmic religious feeling is strongest noblest motive for scientific research."

Modern physicist has not yet confirmed Bhor and his follower or Einstein and his follower whose theory should be acceptable without hesitation. This confusion leads us to go through Vedas to find out the explanation that can relate bhor and Einstein's theory or leads to new knowledge. Why gita or Veda no other books to relate these two theories no other books because both theory inventors of quantum mechanics undoubtedly agreed about acceptance these two books.

In Bhagavad Gita **[6]** it is mentioned "A mundaner 1) is sure to commit mistake

2) illusined

3) Has the tendency to cheat others

4) Is limited by imperfect senses

With these four imperfections one cannot deliver perfect information of all pervading knowledge ." Vedic text and Gita are most influential books which breaks the bar of east and west and time boundary to invent quantum theory. Robert Oppenheimer said" the Vedas are the greatest privilege of this century'

Though in Vedanta directly not deals with quantum mechanics i;e subatomic behaviour of matter but scientist get inspiration and found similarities in it. Hisenberg stated" quantum theory will not look ridiculous to people who have read Vedanta."

Matter consist of atom-atomic theory

A matter consists of smallest particle which is called atom . This concept was first proposed in modern physics by John Dalton that is why he is called father of atomic theory . but 2500 year before Dalton Achariya Kanada Indian sage proposed that a matter consist of tiniest particles which is later on called as atom. He established a school of Indian philosophy namely Vaisheshika.

In Vaisheshika School Kanada presented logically how matter consists of and its existence. He gave example of grain to explain construction of matter. According to him" while the individual grain particles may not have any worth but a collection of hundreds of grains can make up a person's meal the collection of many such meals would serve entire family and ultimately would feed the entire mankind. Therefore even a single grain of rice is as important as all the valuable riches in this world". This was his logical explanation about matter consist of. After this he was known to all as Kanada. The word kanada came from Sanskrit word' kan'that means smallest particle.

Atomic Theory by Kanada

- Matter can be broke
- Atom cannot be broke further
- Atom cannot be destroy
- Atom has specific properties for specific matter
- Atom cannot be seen in naked eyes

He also explained construction of molecules according to him atom of same substance bonded to each other to produce 'dvyanuka' i;e diatomic molecule and ' tryanuka' i;e triatomic molecule. Properties of 'dvyanuka'and ' tryanuka' is similar to the paramanu of original matter. He explained the chemical reaction by giving example of 'blackening of earthen pot ripening of fruit. According to him heat is a factor to start a chemical reaction. According to kanada "life is an organized form of atom and molecules and 'death' as an unorganized form of those atoms molecules.

Concept of radius of atom by kanada

Measurement of paramanu was proposed by kanada in such way

- 8 paramanu =1 rathadhuli, chariot dust
- 8 rathadhuli=1 valagra ,hair end
- 8 valagra =1 liksa, nit
- 8 liksa= 1 yuka,louse
- 8yuku=yava,barley-corn
- 8byava=1 angula,digit(width of a finger, ¾ inch or approx 1.9 cm)

In this period common people used to measure the length angula. One angula is near about 1.9 cm8*8*8*8*8*8=262144 paramanus. Diameter of paramanu is about 72*10^-8. according to modern physics is about 10^-10 m just about 700 bigger than kanad's measurement. The concept of atomic theory developed by kanada based on logical explanation not any experiment or experience but this concept was similar to Leucippus and Democritus. A.L Basham, the Veteran Australian- Indologist said " they were brilliant imaginative explanation of the physical

structure of the world, and in a large measure, agreed with the discoveries of modern physics". According to Dilip M.Salwi" if kanad's sutras are analyzed, one would find that his atomic theory was for more advanced than those forwarded later by the Greek philosophers,Leucippus and Democritus"

Cosmology in Vedic culture

Cosmology is the subject where we cultivate about the origin of the universe or multiverse. As this concept is mostly based on theoretical approach not experimental it has two views scientific and religious. We find concept of cosmology in mythology and in religious literature. Modern physicists are trying to find out origin of the universe in logical way. Both concepts should be welcome as these concepts cannot be tested in materialistic way . Cosmology mainly cultivates large scale structure and motion of universe. Indian idea of cosmology is astrophysical cosmology. Structure of temples ,cites and pilgrims of Indian culture not only religious but also utilization of cosmological knowledge. Cosmological measurement also found in many Indian philosophy and mythology **[7]**. Founder of universe Purusha " bears the measuring rod , knows the division and thinks himself composed of parts."

Unification theory

Unification means utilization of geometrical blocks to build absolute parallelism (AP) geometry. This has great utilization in cosmology. Phase transition of accelerated and de accelerated universe can be explained by this model. Conservation of mass and energy also justify in this model. Concept of unification theory found in Vedic cosmology. There are 33,11,6,3,2 and 1.5 Devas according to Brhadararyaka Upanishad(3/9/1.7) and Yajnavalkya. Many Devas but Brahma is unique. Brahma is one but it blooms in many. In time of creation of universe it had variation. Concept of uniqueness developed by "Anupasyati". Field theory defines matter in two ways such as discrete and spread matter. In Veda this also two type of study 1) vidya(para vidya) unification, 2) avidya (apara- vidya) classification (Fig. 3). Para vidya is also called jana and apara vidya is called vijana **[8]**.

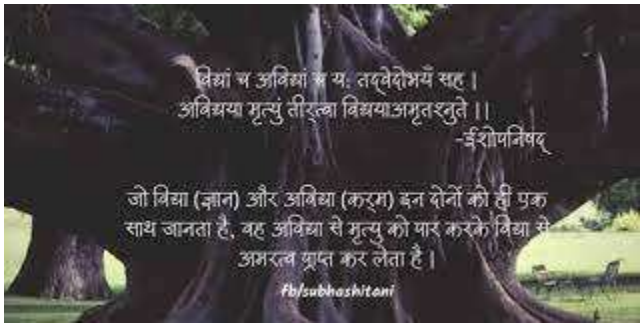

Fig. 3:

Vedic cosmological solution

In modern physics there are many cosmological theory but those are not sufficient .there are some theory in Veda to overcome those problem to explain the origin of universe and its motion. In' Nasadiya Sukta' there is 12 ways by which we can explain the origin of universe.

Sat –Asad Vada

Sat means which can be realized asad means which cannot be realized.

Rajovada

This means explanation of materialistic body and its motion. Rajo means shape of the world. There is Rajoguna (motion)who has been created world and it is maintained by the sattva and destroyed by prominence of 'tama'

Vyoma vada

Is vaccum. Later on we find there vayu,agni, ap, earth. And creation of those is of orderly.

Apra vada

Para is sole, and apara is prakiti which is in "sankhya"

Avarana vada

Cover, vayana. Vayana joins or cover a body which refers to age.

Ambho vada and uniform rasa

By this salila, ap, ambha, mara created . Which are 3 oceans of Nabhasvan ,Sarasvan,Arnava in Universe, galaxy, solar system?

'Amrta-mrtyu' vada –rasa is eternal

That is created must be destroyed I;e mrtyu(purusa sukta 3) . Some time it may eternal.

Ahoratra vada

From the abstract to visibility which means ahor that is day of Brahma and reverse of it ratri. Ahoratra vada is consist of 9 levels **[9]**

Devavada – Prana

Which means energy. It is of two types active and in active. Inactive refers to Asura and active is creative which is refers to Deva. Only Deva is responsible in creation of the world.

Samasayvada

In time of creation of universe there was no matter so all theories are on assumption and it is applicable to a particular limit.

Itivrtta vada

Which is in Purans. In which we find when a stage started that affects later on.

Siddhantavada

Nature changes according to this theory. 'Sambhuti – Vinasa' or 'Sanchara-Pratisanchara" which means two forces in opposite direction. In this vada represents a bird consist of seven Risis . each of seven Risis represents a force. 4 body parts represents gravitation, electromagnetic, strong force and weak nuclear force. Wings of this bird represent symmetric force and tail represents asymmetric force **[10]**.

Yajna

It is about space creation which is 5 layers

- Svayambhuva(created own, universe)
- Paramesthi(biggest one, galaxy)
- Saura (solar system)
- Chandra(sphere containing moon orbit)
- Prthivi(earth)

Particle physics

Particle physics i;e high energy physics is the study of fundamental particle by which a matter is consist of and also forces acting within those particle.

Particle physics can be divided into two types 1) practical particle physics – study of radioactive process and motion and its characteristics in experimental way in large hadron collider. 2) Study of theoretical particle physics.

Fundamental particle is divided into two types 1) fermions 2) bosons. In Vedic period there was no such experimental approach towards the particle physics. Discussion will be about theoretical particle physics in Vedic period. Sankhya theory of triguna indicates the concept of inequality which refers to beginning of cosmic expansion. This phenomenon refers to 'Big-Bang theory'. Big –Bang theory is nothing but space time combination. Modern science has a limitation to explain earlier expansion of universe which can explain in Sankhya. According to Sankhya initial expansion started due to combination of Purush/Primordial place with Mahakala for its own liberation and enjoyment. Later on Sattwa, Raja, Tama presence was responsible to create five senses, mind, five functional senses, five biological sensation and the panchavuta. According to modern science in time of the creation of world ,expanded due to dark energy and dark matter come together to form gravity . Sawtta ana Raja move to each other and

combination of panchabhutas to create materialistic objects. According to modern physics interaction with quarks to form essential elements such as N, C, O etc. Due to lightning, heat, sunlight these elements come together and gradually formation of life which is similar to combination of panchabhuta. Sankhya philosophy mentioned that everything is uncertain in the materialistic world due to Sattwa, Tama, Raja. That means Sankhya philosophy refers to probability and uncertainty principle also **[11]**.

Similarities of Sankhya philosophy and modern particle physics.

Sattwa,Raja,Tama

1)E.M.F; magnetic force depends upon space time stability which can be expressed by sawtta. Electric force is due to motion of the charged particle which is Raja. Thus e.m.f is defined by interaction between Sattwa and Raja.

2) Beta emission; when neutron and proton interchanges through W or Z boson by weak force interaction which similar to interaction of Tama and Raja.

3)Strong interaction ; through gluon six quarks interaction with each other. Gluon has small life time but strong interaction and rest mass 0. So it can be expressed by Sawtta and Raja gluon has no Tama guna as its rest mass is 0.

4)Gravitational force; inter action between two masses through graviton which has small rest masses can be compared with large sawtta and small tama.

5) Belapole or Nirguna; when a particle and anti particle recombine which produce manifestation to un manifestation properties. Sankhya theory mentioned it Belapole or Nirguna

6) Energy Mass transformation; when raja(energy) transfer to tama(mass) and vice versa and comes to an equilibrium this state is called Triguna. Modern science agreed with the theory i;e E =mc^2

7)Dark energy; when universe expanding timeless and boundlessly it will produce a energy which called dark energy which comparable to Raja.

8)Dark matter; gravitational force occurs due to dark matter which uphold dark energy . dark matter mentioned in Sankhya darshan as matter Tamas' guna only.

9) what is matter; in Sankhya philosophy it is mentioned that when sattwa and tama compact with each other by internal energy that produce matter. When it moves its occupies an energy which is raja that means kinetic energy.

10) uncertainty of tama, raja, sattwa; sankhya philosophy mentioned

$\Delta S.(\Delta R \Delta T) \geq h$

ΔS= change of sawtta

ΔR= change of raja

ΔT=change of tama

Which is refer to Hisenberg uncertainty principle. In this context researcher conclude that Sankhya philosophy deals with the scientific approach beyond God's existence **[12]**.

Acoustics in Vedic period

Modern days sound has different aspect in different field of science. Now a day's not only physicist but also scientist of different field such as medical ,engineering ,chemistry is cultivating different characteristics of sound. They are utilizing there research work in development of human civilization. Acoustics is the subject where cultivate production of sound by generating vibration and transmission through a medium as a wave and reception by a receiver. Vedic literature is full of "Mantaras" i;e Sanskrit slocks to shout this slocks it has a particular frequency i;e utilization the knowledge of acoustics . In Veda there is two terms 'Nada' and 'Sabda' which is nothing but sound. Nada and Sabda have the vibration in audible range for human ear. In Vedas mainly discussed about audio range of the sound by vocal or instrument. There cultivation of acoustics had not only physical aspects but also spiritual. Chanting of 'Vedic mantras' has significant approach of acoustics knowledge such as definite frequency, wavelength, vibration ,amplitude. These mantras transmitted from master to his disciples and so on……. So they had maintain particular vibration, amplitude, and the wavelength of mantras i;e they were conscious of knowledge of acoustics. They also believed that this slocks are speech of Goddess speech(VAGDEVI).

"Devim vacamajanayanta Devaha,Tam Visvarupah pasavo vadanti sa no madersmurjm duhana dhenurvagas manupastutaitu" that means 'Brhma and other Devata created Vagdevi to communicate each other . All animals utilizes there capability to communicate to each other through Vagdevi. Vagdevi is like cow who fulfilling all desired with food, strength, and ability to speak.' Dr. C.V. Raman in the article "The acoustical knowledge of ancient Hindus" discussed that development of music is rooted in Rig Veda. According to him " It would form fascinating chapter of history to try and trace the gradual development of musical instruments and musical knowledge, from the rhythmic chanting of Rig Veda in the ancient home of the Aryan race of the Indian music of present day (Fig. 4)."

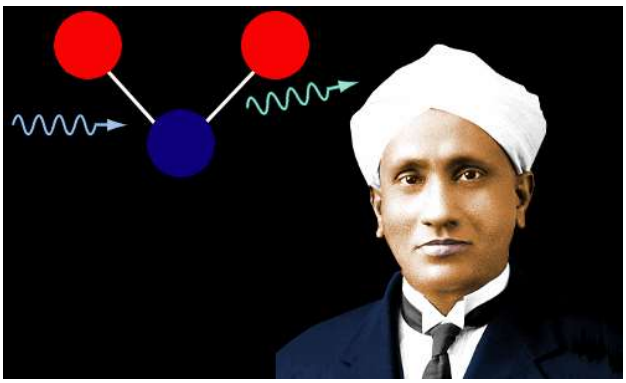

Fig. 4: Dr. C.V. Raman was one of pioneer researcher on Vedic Acoustics

Gandhrava Veda mainly mentioned about musical aspect, definite frequency, vibration and pitch of tone of Mantras of Veda. As those mantras passed on by work of mouth from one generation to another it needed exact knowledge of acoustics otherwise mantras may be distorted and that will be meaningless. UNESCO also appreciated that mantras of Veda has scientific approach. "Expressed the Vedic language, which is derived from classical Sanskrit, the verses of the Vedas were traditionally chanted during scared rituals and recited daily in Vedic communities The value of this tradition lies not only in the rich contents of its oral literature but also the in genius techniques employed the Brahmin Priests in preserving the texts intact over thousands of years. To ensure that the sound of each word remains unaltered . Practitioners are taught from childhood complex reaction techniques that are based on tonal accents a unique manner of pronouncing each letter and specific speech combinations" UNESCO Proclamation 2023.

Different terminology related to sound according to Vedic literature

According to 'taittiriya' Upanishad **[13]**

1) Varnaha; pronunciation/ i;e to chant with definite frequency.
2) Svarha; pitch of sound
3) Matra; a beat- the smallest rhythmic sub unit tala(a musical meter)
4) Balam; force/ loudness
5) Sama; melody
6) Santanoha; combination of sound from different source.
7) Nada, Sabda; refers sound of audible and inaudible range. It is mentioned as sound field. Nada and Sabda are the creation of sound by human beings for speech and music.

Saranga Deva, the author of Sangita ratnakara says "caitanyam sarva bhutanam vivritam jagadatmana nada brahma tadanandam advitiyamupasmhae'i;e ' we the nada brahaman second to none which is blissful and is all beings as consciousness has manifested itself as universe.' This mantra suggested that Nada is of two types 1) Anhata 2)Ahata

Anhata; it is not related any type of vibration it is produced by spirituality and deepest stge of Yoga.

Ahata ; production of ahata is due to vibration of source. Ahata is the sound generated from vibratory source which has main contribution to produce music ,speech, literature and yoga.

Production of speech according to Vedic literature

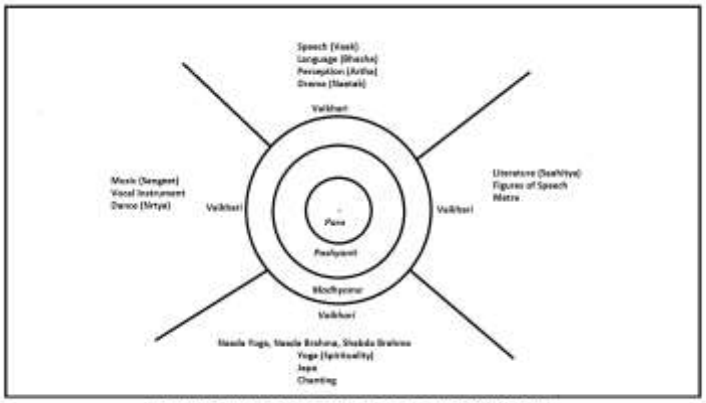

Figure 3: Representation of the four fields of sound at Vaikhari level

According to Vedic literature speech production by human is four stage process

Para

Pashyaanti

Madhyama

vaikhari

In Taittriya Brahmana it was mentioned that " catavari vak parimita tani vidur brahamana ye manisinaha guha tirini nihita nengayanti turiyam vaco manusyaha vasdanti." Which means 'speech or word has four stages which are known by brahmna who has control over mind ,is well versed in this field. The first three stages are concealed in the cave while only the fourth stage come out as utterance by human beings'. According to Sargana Deva in' sangita ratnakara ' creation of sound is " atma vivaksama naoyam manha prerayate,manaha deshatham vahnimahati sa prerayati marutam brahma granthis thitaha soetha kramaturdhvathe caran nabhihrtkan tasyises avavir bhavayati dhvaim". i;e ' the human being implies the mind and the activates the internal power source in the body which in turn stimulates the vital force . the vital force hit the around the root of the navel , rising up words gradually through the heart ,and the cerebrum and the cavity of the mouth as it passes through them to manifest dhvani". This implies four steps of production of sound **[14]** .

Stimulation of mind

↓

Mind tries to generate force and take preparation

↓

Generated force passes through navel, heart, throat, and cerebrum and mouth cavity

↓

Dhavani, i;e sound generated and emit from mouth

Another Hindu texture also discussed about formation of speech through four stages

“ para vangmulacakrastha pasyanti nabhisamsthita hridga tu madhyma jneya vaikhari kanthadesagis.” This mens

‘ in the four fold speech the para level speech manifests at the muldhara chakra (occygeal triangle)

↓

The pasyanti at the manipurak chakra(navel region)

↓

Madyma at the anhata chakra (cardiac region)

↓

The vaikhari at visuddhicakra(at the cavity of the throat)

In comparison to modern science Vedic acoustical view in production dhani i;e sound is more logical approach than modern view in production of speech because in modern view of science do not include physiological aspect here only consider work function of physical organ of human beings. Vedic view also includes speech as divine energy to developed spiritual progression **[15]**. This fourth fold sound generation in Vedic concept can be applied to explain any type acoustical incidents.

Vedic mantra acoustical approach

Vedic mantra and slocks are the bridge to connect people from sensual level to spiritual level of ‘Atman’. Seven notes were used in Vedic mantra which is in modern music . sarvas means Vedic mantrs ,note in music and vowels in language. Sarvas in music defines seven notes of music production of nature

SARVAS

Sa- comes from peacock

Ri-comes from bull

Ga- comes from goat

Ma-comes from curlew

Pa- from cuckoo

Dha- from horse

Ni –from elephant

Raga- this is the word which is frequently used in Indian classical music. To express mood or emotion combining different sarvas raga is produced. Raga is nothing but acoustics presentation of sarvas. In Vedas two types of music was found one is vocal and other is instrumental. Vocal music ice mantras are produced by four stage process where instrumental was generated by different well designed tuned instruments. To design these instruments scientific and engineering knowledge required. In Vedic period there was different type of musical instrument. the renowned instrument were Veena(held by Goddess Saraswati), Mridanga tabala . There are more instruments that have different utilization in different aspect such as conch shell, bell, cymbals and singing bowls. Sound produced by this instrument has special effect and spiritual significance **[16]**.

Acoustics in literature

Vedic literature was written in Sanskrit language which has great acoustics significance. Sanskrit language differ itself from other for its melody i;e its acoustical approach. distinguishable phonetic quality found in poetry, prose of Sanskrit. Some acoustical approach of Sanskrit; Sandhi; joinig of two words refers combination of two tones and production of new are. Derivation of words from same root have similar acoustical approach such as Vidwan: scholar Vidyarthi: student. Acoustical approach is found in Vedic period mainly in mantras, Sanskrit slocks , literature and different musical instruments. Four fold approach of generation of sound in Vedic view can be applied in modern scientific explanation in any kind of production of sound. Vedic mantras have great effect in physiological and neurological point of view.

Conclusion;

It is beyond doubt to claim that the Vedic period in Indian civilization has extensive scientific knowledge about materialistic phenomena. The modern physics inform of new inventions, discovery, theory or laws have a root in the indigenous culture of India. Different texts such as

Tattriya samhita explained different incidents of astrophysics. Different mantras of Sanskrit explained about scientific incidents . Veda is the first step towards the modern science. The concept of atomic physics started in Vedic period by Kanada. In time of Vedic period main development of theoretical physics is due to worship for God. Concept of quantum mechanics in Vedic period is parallel to modern science. According to German physicist Hisenberg "about Indian philosophy, some of the ideas of quantum physics that seems so crazy suddenly become so meaningful." Sankhya darshan about particle physics more relevant to modern concept. Sankhya philosophy is nothing but first step towards particle physics. Sankhya darshan to be considered as pursuit of modern science. Main contribution towards development of physics in time of Vedic period is theoretical and some of instrumental.

These theoretical are nothing but first step towards research work. Concept of research and scientist is nothing but work culture of sages of ancient India. Veda teaches us not only progression of science but also its utilization in novel work of human civilization " vasudhiva kutumbakam' .Veda covers every branches of physics in different philosophy .though in Vedic period mathematics was developed but that was less introduce to explain physical phenomenon.

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