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IP Indian Journal of Neurosciences

Journal homepage: https://www.ijnonline.org/

Review Article

The science behind 'Om': A modern perspective on an ancient Indian philosophy

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Abstract

This paper presents a scientific interpretation of the concept of 'Om,' derived from ancient Indian knowledge systems. It highlights the fundamental similarities between 'Om' and properties such as of neutrinos, as well as concepts from the Standard Model, String Theory, and other scientific frameworks.
The focal point of 'Om' hypothesis says that there is only one real entity which is the Brahman or 'Om' and the world is unreal following the doctrine of present day Quantum mechanics. 8th century Adi Shankara reaffirmed that Brahman (name of the Ultimate Reality) is the only truth, and the world is illusory. Particle physicist Heinrich Pèas, reveals that 'from all things One and from One all things' or monism (also can be inferred to Advaita philosophy) follows logically from certain principles of quantum mechanics once they are applied to the entire universe.
The properties of 'Om' exhibit remarkable similarities to neutrinos and their paradoxes, including aspects such as their source, flavors, oscillations, mass acquisition, identification of the heaviest neutrino, and the question of whether they are Majorana particles.
This hypothesis undertakes a comparative study of the properties of 'Om' alongside concepts from Neutrino science, the Standard Model, and String Theory.
The 'Om' hypothesis, much like Bell's inequality, suggests that local reality does not exist, as every particle in the universe is interconnected. The universe operates as a single, unified system in which each particle is aware of all other particles. This embodies the concept of universal connectedness.
Recent Nanograv 15 findings also confirm the background 'hum' of gravitational waves and the cosmic symphony of 'Sound-the Om'.

Keywords: Om, IKS (Indian knowledge systems), Neutrinos, String theory, Standard Model, Universal connectedness

Received: 22-02-2024; **Accepted:** 28-03-2025; **Available Online**: 14-04-2025

1. Introduction

'Om' is a unitary object with strings-like particle fields; along with force carrying mechanism; with gravity, sound which is fusion of 'Standard model and String theory'.

2. Introduction to Indian Knowledge Systems

The Vedas are a large body of religious texts originating in ancient India. Composed in Vedic Sanskrit, the texts constitute the oldest layer of Sanskrit literature and the oldest scriptures of Hinduism. The Upanishads are late Vedic Sanskrit texts of religious teachings and ideas highly revered in Hinduism. The words Om, Brahman or Atman are the same and used interchangeably in this paper.[1,2,3,4,5,6,7,8,9]

The Upanishads contain the essence of the Vedas. They are the source of Vedanta Philosophy. Profound, original, lofty and sublime thoughts arise from every verse. They contain the direct spiritual experiences or revelations of seers or sages, the Rishis. They are products of highest wisdom, supreme divine knowledge. The Upanishads are metaphysical treatises which are replete with sublime conceptions of Vedanta and with intuitions of universal truths. The Indian Rishis and seers of yore endeavored to grasp the fundamental truths of being. They tried to solve the problems of the origin, the nature and destiny of man and of the Universe.

Most people think that science and spirituality are totally opposite fields of studies, but many noble souls and Nobel

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http://doi.org/10.18231/j.ijn.2025.004

laureates agree from experience in both areas that they are two sides of the, same coin.

3. Discussion

3.1. Philosophy of Om

One unified object called Brahman or Atman or 'Om' is proposed which is the ultimate, the highest that exist in the Universe. That is 'Om' the Brahman. The world has no independent existence apart from the Atman. Though a variety of views are expressed in the Upanishads, they concur in the definition of Brahman as eternal, conscious, irreducible, infinite, omnipresent, and the spiritual core of the universe of finiteness and change.

The doctrine of atman is accorded a position of paramount importance in the philosophical and theological beliefs of Hinduism. The Sanskrit word atman (translated in English as soul or the spirit) refers to the self-existent essence of all beings including the cosmos itself. The soul is the very foundation of all living beings.

3.2. The concept of this Hypothesis ("Brahma satya, jagatmithya")

Sri Adi Shankaracharya, the great master of Advaita-philosophy (monism) who lived in the early part of the 8th Century said, "Brahma satya-jagat-mithya, jivob-rahmaiva-naparah". It means Brahman (name of the Ultimate Reality) is the only truth, the world is illusory, and there is ultimately no difference between the individual Self and the Brahman.

Mithya means, neither true nor false. The world cannot be false because we all clearly see and perceive it. Sri Shankaracharya says that the world is not true either, because it is constantly changing and everything that the world has to offer is temporary, transient and impermanent.

"From all things One and from One all things," wrote the ancient Greek philosopher Heraclitus. You might read this as a platitude, or as a pleasant spiritual or philosophical idea. You probably wouldn't read it as a more-or-less accurate scientific statement about the nature of the universe. Particle physicist Heinrich Pèas, however, does. In the book 'One', Pèas makes the surprising and compelling case for monism-the philosophical idea that one single, all-encompassing thing underlies everything we experience-rehabilitating the idea's reputation and reclaiming it for science. At first glance, the idea that "all is one" seems patently absurd. But Pèas reveals that monism (also can be inferred to Advaita philosophy) follows logically from certain principles of quantum mechanics once they are applied to the entire universe.

He shows how monism is not only a feasible theory from a scientific perspective but a potentially powerful solution to the stagnation of thought in contemporary physics, arguing that if physics is ever to progress, physicists must learn to embrace insights from, outside the narrow silo of experimental knowledge.

3.3. Present dilemma of modern physics

Some of the major unsolved problems in physics are theoretical, meaning that existing theories seem incapable of explaining a certain observed phenomenon or experimental result. The others are experimental, meaning that there is a difficulty in creating an experiment to test a proposed theory or investigate a phenomenon in greater detail.

There are still some questions beyond the Standard Model of physics, such as the strong CP[10] problem, neutrino mass, matter–antimatter asymmetry, and the nature of dark matter and dark energy. Another problem lies within the mathematical framework of the Standard Model itself—the Standard Model is inconsistent with that of general relativity, to the point that one or both theories break down under certain conditions (for example within known spacetime singularities like the Big Bang and the centre's of black holes beyond the event horizon).

3.4. Answers from ancient Indian Knowledge systems

Ancient Indic wisdom enshrined in the form of Vedas, Upanishads, Bhagavad Gita etc., have proposed a single theory unlike in the modern science where two sets of laws exist, like general theory of relativity for large scale and Quantum theory for microscopic world.

Only One single theory for Anda (Egg), Pinda (Body) and Brahmanda (Large scale/ Cosmological) is proposed in the Indian knowledge systems (IKS). Hence the proposed hypothesis also takes sound & gravity into consideration, along with String theory.[11]

Further, what Bell's theorem means is that Quantum Mechanics is indeed the real way, even though it seems to defy logic? So the conclusion is that Non-locality is the ultimate reality. Non-locality has a huge implication on our views of real existence. There is nothing like a local reality, as every particle in the universe is in some way connected to every other particle in the universe. The universe acts as a single connected system of particles where every particle is aware of every other particle. This is universal connectedness.

3.5. A comparative study of Neutrino science/ Standard model/ String theory concepts alongside the 'Om' Properties

Note:
Scientific understanding is put in the left indent.
The philosophy of 'Om' is put in the right indent.

A neutrino is a particle! It's one of the so-called fundamental particles, which means it isn't made of any smaller pieces, at least that we know of. While electrons have a negative charge, neutrinos have no charge at all. Neutrinos are also incredibly small and light. They have some mass, but not much. They are the lightest of all the subatomic particles

that have mass. They're also extremely common-in fact; they're the most abundant massive particle in the universe. Neutrinos come from all kinds of different sources and are often the product of heavy particles turning into lighter ones, a process called "decay.

Om is ubiquitous. All living and inanimate objects in the entire universe are representation of this, the 'Om'. All that is past present and future is Om. That which is beyond the triple conception of time is, also Om. "Om is this"; "Om is the support"; "Om is Brahman"; "Om is the Akshara, the immortal"; "Om is the Atman"; "Om is pure chaitanya consciousness"; " The word Om is all". These texts of the Upanishads declare that Om, Brahman and Atman are one and the same. The holy texts have described. This with negative attributes. In Sanskrit by the words, 'neti, neti' meaning not this, not this….

It moves, It moves not. It is far and it is near. It is within all this. It is outside of all this. Atman is extremely subtle. Atman is neither female, nor male, nor neuter.[12] Whatever body He takes, with that He becomes identified or joined or connected which is charge-less.

Figure 1: From the age-old images that have come from time immemorial, the 'Om or AUM' looks like this: closed strings or concentric circles around a centre point with different radii.

Figure 2: Whole universe is filled with Om. Author's imaginative spread of Om in the sky. Om is ubiquitous, as quoted in Gita and many Upanishads It is all pervading

Neutrinos are also tricky to study. The only ways they interact is through gravity and the weak force. This weak force is important only at very short distances, which means tiny neutrinos can skirt through the atoms of massive objects without interacting. Most neutrinos will pass through Earth without interacting at all. Of all particles with mass, neutrinos are the most abundant in nature. They're also some of the least interactive.

'Om' is the Imperishable (Aksara). It is not coarse, not fine, not short, not long, not glowing (like fire), not adhesive (like water), without shadow and without darkness, without air and without space, without stickiness, (intangible), odorless, tasteless, without eye, without ear, without voice, without wind, without energy, without breath, without mouth, (without personal or family name, unaging, undying, without fear, immortal, stainless, not uncovered, not covered), without measure, without inside and without outside.[13]

It consumes nothing so ever. No one so ever consumes it.

This is the best support. This is the highest support. At the command of that Imperishable, the Sun and Moon stand apart, at the command of the Imperishable, the earth and the sky stand apart. The rivers flow (Referring to Gravity). It is motionless, but swifter than mind.[14] (Faster than speed of Light)

Neutrinos come in three types, called flavors. There are electron neutrinos, muon neutrinos and tau neutrinos. One of the strangest aspects of neutrinos is that they don't pick just one flavor and stick to it. They oscillate between all three.

‘Om’ has four flavors. Wakeful state, dream state, deep sleep state and lastly Turiya state which are called Vaiswanara, Taijasa, Prajna, and Turiya respectively. Visva (Vaiswanara) merges in Taijas, Taijas in Prajna and Prajna dissolves itself in Turiya Atman-Brahman. They oscillate between all four flavors.

In modern physics the element ‘sound’ has no extra significance until recently. As per the Nanograv 15 experiments, there is experimental evidence of Cosmic symphony or the hum of gravitational waves.

"The concept of 'Om' is deeply rooted in the element of sound. Om serves as a pratika or symbol for Brahman and is known as the Sabda-Brahman. It is also referred to as Pranava, Ekakshara, and Omkara, representing the fundamental basis of all sounds. Om is considered the most appropriate sound-symbol of Brahman, consisting of the three letters A, U, and M.

The string resonance or meter (Chandassu in Sanskrit) of 'A,' 'U,' 'M,' and the fourth sound Turiya are 8, 11, 12, and 26, respectively. While modern science has recently confirmed the existence of a universal cosmic hum background, ancient Rishis had noted the meters of gravitational waves ages ago."

String theorists have many theories floating around about the possible number of dimensions, and 19 free parameters as per the Standard model.

‘Om’ has four quarters[15] (Four feet, portions, aspects, or dimensions, or conditions).Chatushpat, in Sanskrit.

The first quarter is Vaisvanara whose sphere is the state of waking, who is conscious of the external objects, who has seven limbs (Components) and nineteen mouths (Parameters) and who enjoys the gross objects. Represented by the letter ‘A’ in AUM

The second quarter is the Taijasa whose sphere or field or place is dream, who is conscious of internal objects, who has seven limbs and nineteen mouths and enjoys the subtle objects. Represented by the letter ‘U’ in AUM.

The third quarter or condition is the Prajna, that is the state of deep sleep wherein the sleeper does not desire any objects nor does he see any dream, whose sphere is deep sleep, in whom all experiences have become one, who is verily a mass of consciousness, who is full of bliss, who enjoys bliss, and who is the way leading to the knowledge (of the two other states). Represented by the letter ‘M’ in AUM.

The Jivatma experiences deep sleep when he does not experience sound and other objects of sense by the cessation of functions of the nineteen organs.

The wise think that the fourth (quarter), Turiya, is not that which is conscious of the internal (subjective) world, nor that which is conscious of the external (objective) world, nor that which is conscious of both, nor that which is a compact mass of knowledge, nor that which is simple consciousness, nor that which is insentient. It is unseen, unrelated, incomprehensible, undefinable, unthinkable, indescribable, the sole essence of the consciousness of the self with no trace of the conditioned world, all bliss, Non-dual. This is the Atman, the self and to be realized.

Neutrinos are created in many processes in nature. They are produced in the nuclear reactions in the sun, particle decays in the Earth, and the explosions of stars. They are also produced by particle accelerators and in nuclear power plants.

What is above the sky, that which is beneath the earth, that which is between these two, sky and Earth, that which people call the past, the present and the future-across what is that woven, warp and woof? It is the ‘Om’. All living and inanimate objects in the entire universe are representation of this, the ‘Om’.

Neutrinos don’t seem to get their mass in the same way as other particles in the Standard Model. So now we know: Neutrinos aren’t mass-less, they’re just incredibly light—a million times lighter than the next lightest particle, the electron. We know neutrinos come in three flavors. And they don’t stick to just one of those flavors; they oscillate from flavor to flavor as they move through space. This feat is only possible because they have non-zero mass. Neutrinos are a type of fundamental particle known as a fermion. All other fermions,[16] such as leptons and quarks, gain their mass through their interactions with the Higgs boson.[17] But neutrinos don’t seem to follow that trend.

As we experimentally observe them now, neutrinos cannot interact with the Higgs field because they’re are missing something vital: They are not right-handed. But in the case of neutrinos, this is more complicated. That’s because, confoundingly, all neutrinos appear to be left-handed.

The shape and structure of the ‘Om’ has reference in ancient literature and images. It comprises of a dot or circle centre point with concentric circles around, with different radii.

The closed strings or loops have different energy levels represented by their respective color spectrum. These strings are the cause of how, ‘Om’ gets its mass.[18]

First quarter/ or Dimension (A in AUM) is in red color. The energy/force is like yellow made of Gold;

Figure 3:

Second quarter/ or Dimension (U in AUM) is black in color**.** The energy/force is electrical field.

Third quarter or Dimension (M in AUM) is white in color. The energy/force is like white spectrum/ Silver in color.

Figure 4:

The fourth, half measure has the color of Goddess LakshmiDevi. Its energy/force is mix of all colors.

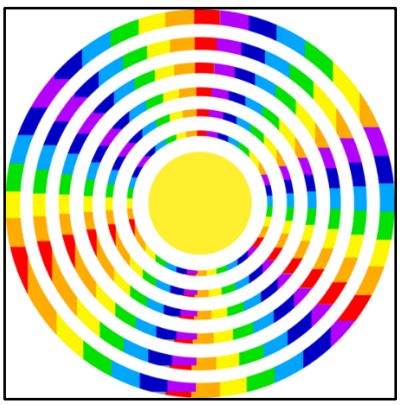

Figure 5:

3.6. This is how, as per the spectrums of the respective strings, Om gets its mass

Although scientists have yet to detect right-handed neutrinos, they already know of a different group of right-handed particles in the neutrino ecosystem: antineutrinos. That brings us to the next theory: It's possible that a neutrino is actually its own antiparticle.

The apparent lack of right-handed neutrino forms the main mystery of neutrino masses.

If the antineutrino and neutrino are simply right-handed and left-handed versions of the same particle, then they should be able to marry to get a mass. This would mean neutrinos are something called Majorana[19] fermions, which can only occur when both the particle and antiparticle are identical.

In this scenario, the neutrino would get its mass through an interaction with its antineutrino. To make this work, theorists would need to invent something else, like a unique form of the Higgs boson especially to interact with neutrinos.

4. Conclusion

In the article by Claus Kiefer 'Godel's un-decidability theorems[20] and the search for a theory of everything', he says unless the structure of space-time is fundamentally discrete, we can never decide whether a given theory is the final one or not. This is relevant for both canonical quantum gravity and string theory. In the case of 'Om' space-time are discrete. 'Om' is beyond time and within four dimensions of space.

The present paradoxes in Neutrino science and the prospective hints upon experimental evidence so far, suggest that 'Om' is the elusive object which the current scientific community is searching for. 'Om' hypothesis is the Unified grand theory or the TOE.

5. Source of Funding

None.

6. Conflict of Interest

None.

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Cite this article Tata R, Raju VR. The science behind 'Om': A modern perspective on an ancient Indian philosophy. *IP Indian J Neurosci* 2025;11(1):17-22.