ISSN (ONLINE) 2583-2506
http://publications.rayatbahrauniversity.edu.in
RBIJMR-Rayat Bahra International Journal of Multidisciplinary Research, Vol. 02, Issue 02, December 2022

Vedic Physics: Roots of Modern-Day Physics in Vedas

Gaurav Katoch [*] ***and Gazal Sharma***

Department of Physics, Rayat Bahra University, Mohali-140104, India

Abstract: *Physics is a study of matter and its motion, along with related concepts such as energy and force. The Vedas and Puranas have given beautiful explanation to Physics it's called "Vedic Physics" or "Bouthika Shastram". Classical Physics is generally concerned with matter and energy on the normal scale of observation, while much of modern physics is concerned with the behavior of matter and energy under extreme conditions or on a very large or very small scale. The majority of the groundbreaking discoveries made by our seers and scholars during the Vedic era in the fields of astronomy and fundamental physics have since been confirmed by rigorous theory and/or experiments. However, due to a lack of communication between people and information during the Vedic era, their findings were largely restricted to India and did not spread to the west. This was the main factor in Indian contributions not receiving the credit they needed. Lack of proper instruments, especially in the field of astronomy, was the primary shortcoming at that time, which led to some of their findings being rather speculative. In contrary, western scientists produced discoveries that have lasted the test of time because they either built or had access to pertinent instruments. A brief discussion about the roots and origin of Modern Physics and achievements of the glorious era of physics in Vedas are highlighted in this article.*

Keywords: Vedas, Physical Science, Universe, Ancient India

Corresponding author: Mr. Gaurav Katoch
email: gaurav.18681@rayatbahrauniversity.edu.in

ISSN (ONLINE) 2583-2506
http://publications.rayatbahrauniversity.edu.in
RBIJMR-Rayat Bahra International Journal of Multidisciplinary Research, Vol. 02, Issue 02, December 2022

1. Introduction

Science is a specific applied form of factual knowledge that establishes an enduring reality inside all of us. Vedic science and modern science are identical; only the passage of time distinguishes between both of them. Vedic science is consistently accurate and true. Some people regularly boast that the mantras found in Vedic texts are scientific equations that can be used to comprehend the universe. These mantras do provide explanations for the phenomena that exist in the world, but they are of a rather different kind. Using the example of a pot to explain the concept of space, as was the custom among Indian philosophers, is a good example in this regard. They contend that the pot serves as an example for how space can exist both inside and outside of an object. A scientist, however, would respond very differently to the same question. Vedas provide explanations of natural occurrences based on the authors' perceptions and experiences rather than discussing God outright. It provides a sort of explanation for how the world came to be. Vedas are a storehouse of knowledge, and if we define it that way, it may be a very indigenous sort of knowledge.

Since we refer to this time period as Vedic, it suggests the significance of science as a way of gaining knowledge during that period of Indian history. We are still told in some history textbook, that for a long time, scholars thought that this knowledge was nothing more than self-referential presumptions. Such a viewpoint is incorrect, as recent discoveries in archaeology, astronomy, science history, and Vedic scholarship have demonstrated. We now understand that Vedic knowledge included elements of physics, math, astronomy, logic, cognition, and other fields. We discover that the earliest science that has been transmitted to us is Vedic science. This has profound effects on our comprehension of the development of early civilizations and the evolution of ideas.

Our earliest scientific reconstructions are based not only on the Vedas but also on their appendices known as the Vedangas. The six Vedangas are concerned with: kalpa, ritual performance with geometric, mathematical, and calendric fundamentals; shiksha, phonetics; chhandas, metrical structures; nirukta, etymology; vyakarana, grammar; and jyotisha, astronomy and other recurring phenomena. There are indeed naturalistic explanations in various Vedic books that reveal a considerable measure about scientific theories of that time.

For example, atomic and nuclear physics studies matter on the smallest scale at which chemical elements can be identified. Vedic sages went to deep meditation, concentration, contemplation and discovered a large number of permanent laws about Vedic physical sciences. Vedas, Upanishads, Puranas, Shad-Darshanas (among them Sankhya, Vaishesika, Nyaya Darshanas) had postulated many theories about Universe and its Atomic Structure in their own perspective.

ISSN (ONLINE) 2583-2506
http://publications.rayatbahrauniversity.edu.in
RBIJMR-Rayat Bahra International Journal of Multidisciplinary Research, Vol. 02, Issue 02, December 2022

1. Philosophy and Physical Science

Physics, chemistry, earth sciences, and space sciences are all part of the physical sciences. By far the majority of focus has been given to physics by philosophers. They have concentrated their efforts in the last century on two areas in particular: spacetime physics and quantum physics. Philosophers have been concerned with whether simultaneity is customary, and whether the theory of relativity is compatible with the philosophical idea of presentism. Philosophers have extensively discussed whether spacetime exists (substantivalism) or if it is simply a system of relationships between material objects (relationism). Recently, philosophers have been perplexed by the assertion that Einstein's theory of general relativity possesses "gauge freedom", implying that there is no objective time continuum.

Philosophers have been most troubled by the discrepancy between the laws of theory and the description of the measurement process in relation to quantum physics (the measurement problem). Alternative interpretations of quantum theory, such as Bohmian mechanics, Everettian quantum mechanics, and the Ghirardi-Rimini-Weber theory, have been promoted by philosophers to resolve this contradiction. Philosophers have also wondered whether Bell's theorem, which asserts that quantum theory is nonlocal, is compatible with the theory of relativity. Given that relativistic quantum field theory is currently the most basic theory of physical matter, the latter question is particularly important.

There is a lot of literature on various physical theories, like electromagnetism, classical mechanics, Newtonian gravity, and statistical mechanics, within the philosophy of physics. Other physical fields like chemistry and cosmology are now receiving equal attention from philosophers.

2. Theories on Creation of the Universe

The twentieth century saw the development of several scientific ideas on the origins of the Universe, including the Big Bang Theory, the Steady State Theory, and the Oscillating Universe Theory, the quantum theory of the universe, string theory, and many other theories [1].

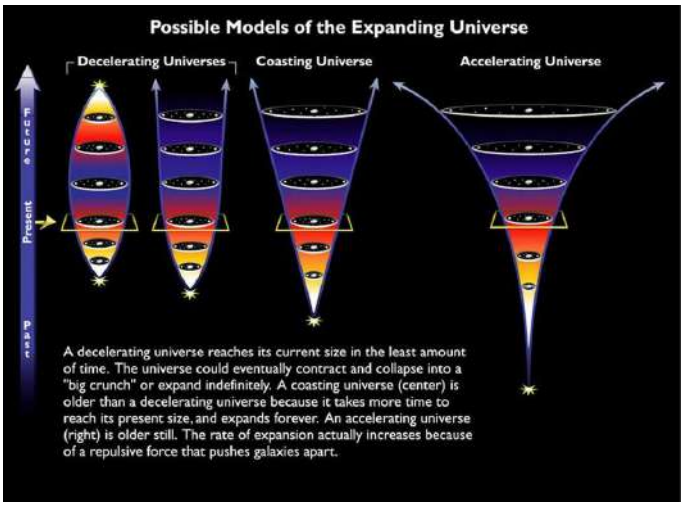

Fig. 1: Possible models of the expanding Universe, Image credit: NASA & ESA.

The Big Bang is the preeminent scientific theory in physical cosmology explaining how the universe suddenly burst into from an extremely dense and hot state around 13.7 (± 0.2) billion

years ago [2]. Ever since, space has continued to expand with the passing of time, dragging galaxies along with it.

The idea is based on data that show that space is expanding (in line with the Robertson Walker general relativity model), as shown by the Hubble red shift of distant galaxies when combined with the cosmological principle. A gravitational singularity, where all distances are equal to zero and temperature and pressure are unlimited, results from extrapolating the history of the universe backwards using the present physics models. It is unclear what this means, but the majority of physicists think that this finding stems from our incomplete knowledge of the applicable physical principles, particularly because there is no accepted theory of quantum gravity.

In a more general sense, the term "Big Bang" refers to the dominant cosmological paradigm explaining the origin and expansion of the universe as well as the composition of primordial matter through nucleosynthesis as predicted by the Alpher Bethe-Gamow theory. In a more specific sense, the term "Big Bang" refers to a point in time when the observed expansion of the universe (Hubble's law) began, which is calculated to be 13.7 billion years ago (0.2%) [3].

George Gamow was able to anticipate the presence of cosmic microwave background radiation from this model in 1948[4], at least qualitatively (CMB) [5]. The 1964 discovery of the CMB added to the Big Bang hypothesis's growing body of evidence, giving it a competitive edge against the steady state theory [6].

3. Conservation of Space, Matter and Energy

Einstein established the parity of matter and energy at the dawn of the twentieth century. The Vedas have come back to us now to reveal an even deeper truth: that space, matter, and energy are equivalent. In the same way that matter and energy are, so is space. Because there was no space in the beginning, there was no mass energy in the cosmos. The universe's expansion results in the creation of mass-energy. Without the creation of mass-energy, the universe cannot grow; similarly, it cannot contract without the annihilation of mass-energy. As a result, the cosmos had no mass or energy when it began, and it will have none at its conclusion. No singularity existed at the beginning and there won't be one at the end.

4. Vedic Explanation to the Creation of Universe

There are two schools of spiritual philosophy in India: Shruti (direct experience) and Smriti (recollection). The Shruti tradition includes the mystical Upanisad discourses and the Rigved discovery. Prof. Satya Prakash Saraswat, Professor of Computer Information Systems at Bentley College in Waltham, Massachusetts, explains how the religious fire (AGNI) of Vedic worship represents the holy and absolute spirit that Creates (G), Operates (O), and ultimately

Destroys (D) the universe. He does this through the recital and methodical translation of pertinent mantras from the Rigveda and passages from the Upanishads.

The pure and primordial energy of the cosmos that was produced at the time of the Big Bang is represented by AGNI, which is referred in the Rigveda as the "first born of creation". The "incredible" universe was created at this very time by the union of two "supernatural" energies, Prakrti, the creative force of the Supreme Spirit of the cosmos, and Purusa, the omniscient and all-pervasive mind of the cosmos. According to the Rigveda, this primordial energy later changes into three other types of energy: the energy of life (Vaishvanar Agni), the energy of thought (Pragya Agni), and the energy of radiation (Taijas Agni).

A well-known cosmologist, Steven Weinberg in his well celebrated work, "The first three minutes" has stated that the beginning of the Universe from a singularity in an expanding space-time called the big bang has become the most widely accepted theory on the origin of the universe in which we live. In 1973 Edward P. Tyron proposed a theory that could overcome some of the problems of this model. He suggested that, "our universe is a fluctuation of the vacuum, where vacuum fluctuation is to be understood in the sense of quantum field theory". In 1978, R. Brout. F. Englert, and E. Gunzig published a paper entitled "The creation of the Universe as a quantum phenomenon". They proposed a model that described the process originally suggested by Tyron.

5. Conclusion

The relationship between the Vedic interpretation and contemporary physics trends on the origin of the universe has been considered, and it has been discovered that the Vedic expositions and scientific discoveries are similar to each other and on the same track. Therefore, the end product of this intellectual process is both philosophy and science. In laboratories and observatories, the creation of the universe has been studied; nevertheless, one discovery has been contradicted by another finding, and it's possible that the goal hasn't yet been reached.

Spiritualism, contemporary science, and philosophy may initially seem to have little in common, but they are actually very closely related, much like the three corners of an equilateral triangle, without which the triangle's identity (i.e., humanity) would not exist.

Aryabhatta, Varahamihira, Bhaskaracharya, Charaka, Sushruta, and other famous Vedic seers who devoted their whole life for the evolution and creation of Vedic. It is sometimes questioned why Indian science started to collapse from the thirteenth century onward, and different explanations are put forth. Each of the diverse explanations could be correct, but in my opinion, the primary cause was the abrupt break in the former harmony between intuitive, philosophical, and scientific pursuits that took place at that time.

Since the country's independence, Indian researchers have had the chance to close the gap, and they have excelled in some areas in particular. The quality of science education for the general public still needs significant development and integration with the philosophical ideas of ancient Indian scholars. On the one hand, the study of the physical sciences needs to be followed in India by practical demonstrations and greater experimentation, as is customary in the West, which was absent from our Indian Knowledge System because our predecessors never considered exploiting nature. Another thing that can be learned from the Indian tradition is how elegant certain earlier formulations were conceptually as well as how easy it is to explain and instruct through analogies.

References

[1] J. D. Barrow, (1988), The World within the World, Oxford University Press, Oxford.

[2] F. Hoyle, (1948), A New Model for the Expanding universe, Monthly Notices of the Royal Astronomical Society, **108**, pp.372.

[3] R. A. Alpher, H. Bethe and G. Gamow, (1948), The Origin of Chemical Elements, Phys. Rev. **73**, pp.803.

[4] G. Gamow, (1948), Nature, **162**, pp.680.

[5] A. A. Penzias, and R. W. Wilson, (1965), A Measurement of Excess Antenna Temperature at 4080 Mc/s, Astrophys. J., **142**, pp.419.

[6] R. H. Dicke, P. J. E. Peebles, P. G. Roll and D. T. Wilkinson, (1965), Cosmic Black-Body Radiation, Astrophys. J. **142**, pp.414.

[7] The Positive Sciences of the Ancient Hindus (Brajendranath Seal).

[8] Concise History of Science in India (Bose, Sen, Subarayappa, Indian National Science Academy).

[9] Studies in the History of Science in India (Anthology edited by Debiprasad Chattopadhyaya).

[10] Causation in Indian Philosophy (Mahesh Chandra Bhartiya, Vimal Prakashan, Ghaziabad).