

## *Anekânt and modern Physics*

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### ABSTRACT

*Anekânt* is the soul of Jainism. All Jain scriptures are written on the basis of *Anekânt* and without its knowledge it is difficult to understand the doctrines of Jain religion. According to Jain philosophy objects are infinite in their qualities and modes of existence, so they can't be completely grasped in all aspects and manifestations by finite human perception. *Anekântavâda* is one of the most important and fundamental doctrines of Jainism. It refers to the principles of pluralism and multiplicity of viewpoints, the notion that truth and reality are perceived differently from diverse points of view, and that no single point of view is the complete truth. The origin of *anekânt* can be traced back to the teachings of Mahavira (599–527 BCE), the 24th Jain Tirthankar. As Jain religion is a scientific religion having the base of *anekant*, it was thought to find out whether the modern scientific researches also follow the principle of *anekant* or not. In the earlier studies by persons, modern scientific innovations were studied by applying the doctrine of seven points of notion (*saptbhangi*) to prove that these follow *anekântvâda*. In the present paper a totally new method is adopted. Concepts of Physics innovations are compared with that of similar concepts of Jainism. It is found that both concepts have a close resemblance. As the Jain concepts are based on the principle of *anekânt*, it proves that the modern Physics researches are also following *anekântvâda*. The present method is very much useful to explain the basic doctrines of Jainism in the light of scientific innovations. Some of the concepts of Jainism and modern Physics compared are: (1) Concept of Quanta & Quantum mechanics. (2) Einstein's concept of cosmic space (*Lokâkâsh*, the physical universe and *Alokâkâsh*, the *vacuous space*.) (3) Einstein's theory of relativity. (4) concept of *parmânu(atom)* and matter in Jainism and science, production of various types of energies like light, heat, sound, Laser, fission, fusion etc. (5) Einstein's mass energy relation. It is very interesting to mention that the Jain *parmânu*, the real quantum of energy, is far too smaller than the quantum of energy, photon, assumed in Physics. Some of the other outcomes are: (1) Jain *parmânu*- the ultimate particle of matter-is similar to quanta of energy of Physics. (2) The concept of quantum mechanics also exists in Jainism. This has been explained in the paper. (3) There is a possibility for the existence of two hundred types of elements as against only 118 elements discovered so far in Physics.

Key words: *Anekânta*, *Syâdvâd*, *Saptbhangi*, *Naya*, Wave- particle duality, causality  
Scriptures Quoted: Bhagvati Sutra, Tattavarth Sutra, Uttarâdhyâyan Sutra, Panchastikâya, Purushârthsiddhiupâya, samaysâra. Niyamsâr

## **1.INTRODUCTION**

Objects are infinite in their qualities and modes of existence, so they cannot be completely grasped in all aspects and manifestations by finite human perception. Only the *Kevalis*—omniscient beings—can comprehend objects in all aspects and manifestations; others are only capable of partial knowledge.<sup>1, 2</sup>. Consequently, no single specific, human view can claim to represent absolute truth. *Anekântavâda* encourages its adherents to consider the views and beliefs of their rivals and opponents. Thinkers having a singular view in mind can see only one facet of Reality and cannot realize Reality in full. It has been mentioned in the scriptures that one who is "equipped" with *Anekânt* attains *samyakdrishti*(one having rational perception) and *Kewaljnâna* (omniscience)<sup>3</sup>. In the recent times very alarming discoveries are made in the field of Physics. As Jain scriptures contain lot of science and are in agreement with the doctrine of *anekânt*, comparative study of the scientific concepts and Jain concepts was made to find out whether the modern Science also follows this concept of *anekânt* or not.

### **2. Comparison of Concepts of Jainism and Science**

#### **(i) Jain and scientific concept of cosmic space -Physical universe and empty space**

According to Jain concept, there are six eternal substances namely cosmic space, principle of motion, principle of rest, the soul, matter and energy and time. These all six together have constituted universe. Cosmic space is divided into two parts. In the space in which living beings are present is physical space or universe and remaining part is empty space<sup>4</sup>. Both divisions of space are intangible. The physical space accommodates all five entities, namely, the principle of motion, the principle of rest, souls, matter and energy and time. Jain scriptures mention that though the space is continuous, infinite and boundless, it fluctuates as if it is made of infinite number of Jain atomic size iotas<sup>5</sup>. It is to be noted that the Jain atom is an extremely tiny formless, dimensionless and indivisible particle.<sup>6</sup> Jain atom is similar to the quantum atom of science. The ultimate particle of matter which is also known as Jain atom, occupies a single iota of space. Due to the property of contraction and expansion of matter, a large no. of ultimate particles (Jain atoms) can be accommodated in a single iota of space. In *Dravyasangraha*, Aârya Nemichandra writes: An iota of space is defined as the expanse occupied by a single Jain atom; it is capable of accommodating numerous such atoms. A super massive black hole, discovered by astronomers at the center of galaxy M87 by using the Hubble space telescope, furnishes an interesting illustration of this concept. According to Einstein`s theory given in 1905, cosmic space is infinite gravitation field which contains small amount of matter and energy. Einstein called physical universe as visible space or universe and empty space as infinite empty space, containing dark matter and dark energy. Jain scriptures are also of the similar view with a little difference that empty space is not empty but contains cosmic material also known as energy quantum field that fluctuates continuously. In *Uttaradhyayan Sutra*<sup>7</sup> the cosmic space is described as cosmic space with the property of stature and expanse. Thus we conclude that there is a very close similarity between Jain and scientific view about cosmic space.

**(ii) Jain and scientific concept of Quantum Mechanics:** The quantum mechanics puts severe constraints on certainty of our knowledge. A particle behaves in different ways at different times as shown by the scientist Heisenberg in the famous uncertainty principle which states that it is impossible to simultaneously determine the precise position and momentum of a particle. This is clear from the famous two-slit experiment which is the backbone of quantum mechanics and particle-wave duality. Though there is some indication about the presence of quantum mechanics in several Jain scriptures like Bhagvati sutra, Tattvarth sutra, Panchastikaya etc., but its presence is not established scientifically. The presence of quantum mechanics is being shown here. The Jain quantum concept is established by the very fact that all the six substances are integral multiple of Jain atom<sup>8</sup> which can't be fractioned. According to Einstein and other scientists, there is quantization of energy i.e. The emission and or absorption of energy takes place in the form of integral multiple of quanta of energy, Following Planck's equation,  $E = nhc/\lambda$ , (where  $n=0, 1, 2, 3$  etc  $h$ =Planck's constant,  $c$ = velocity of light and  $\lambda$  is wave length of light used - which have standard values). Putting  $n=1$  in this eqn. the value of energy is known as one **quanta** of energy. In the same way energy of a Jain atom may be thought to be equal to one **quanta** of energy because of the fact that the formation of molecules (*skandha*) take place in the integral multiples of one, two or more Jain atoms and also of the other properties assigned to it. Jain *Parmânu* is the unit of matter (*skandha*). Matter and energy can not exist in quantity less than a Jain *parmânu*. We, therefore conclude that the Jain *parmânu* is like a quanta of modern Physics. Thus the Jain and scientific concepts have close resemblance. Jain and scientific concept of quantum mechanics very much match with each other, confirming that scientific researches in the field of quantum mechanics follow *anekântvâda*.

The existence of soul, could be dealt within the framework of *anekântvâda*. It is, it is not; it is and yet it is not, it can not be expressed and so on. It is not a limitation of consciousness that it has limited capability of perception of the physical world. *anekântvâda* successfully accommodates such views and completes the description of physical reality. *Saptbhangi* or sevenfoldedness is a corollary of *anekântvâda*. This has been very clearly explained by D.S.Kothari in his essay on " Complementarity principle and Eastern philosophy." *Saptabhangi* has been explained very succinctly by Kothari in a quantum mechanical way by taking the example of a particle in a box which is divided by a partition with a hole into two compartments. Because of the particle-wave duality, the particle can be in compartment A, or in compartment B, In A and still not in A, In B and still not in B, not in A and B, in A as well as in B and in an indeterminate state (*avaktavya*)<sup>10</sup>. The same solutions emerge from the consideration of quantum mechanics as has been shown mathematically by taking wave functions.

### **(iii) Concept of Jain *parmânu* (atom) and matter in Jainism & science:-**

Jain *parmânu* is the smallest part of a matter (*Pudagal*) which can not be further subdivided by any means. It is dimensionless, formless and indivisible particle of *Pudagal dravya* (material). Its initial point, central point and end point is itself.<sup>11</sup> The atom of science is much bigger than the Jain *parmânu*. According to Jain philosophy, atom is a combination of a large no. of Jain *parmânu*. Whereas an atom consists of a no. of particles like electrons, protons, neutrons, quarks etc., Jain *parmanu* is the very last part of a material. According to Jain scriptures '*parmânu*' is

not only the smallest indivisible material particle but is the 'creator' of the universe, because of the special properties it possesses.<sup>12</sup> *Parmânu* is the unit of matter (pudgala) and therefore all properties of materials and their energy are measured in units of *parmânu*. *Jain Parmânu* may be thought to be similar to quanta of modern Physics. *Jain parmânu* combines with other *parmânu*s to make what is known as 'skandha'. Jain Agams describe the process of formation of diatomic, tri atomic and multi atomic molecules (*skandha*)<sup>13</sup>. The phenomenon is similar to Dalton's Atomic theory. Jain scriptures also mention that *parmânu/skandha* executes different types of motion<sup>14</sup> which produce light, heat, sound like waves<sup>15</sup>. This again is similar to Bohr's quantum atomic model theory.

The Jain ascetics explained the creation and evolution of the universe and life in *Vyavahâr naya* (variant form) and in *Nishchaya naya* (non-variant form) similar to modern practice of explaining physical phenomena as a classical event or as a quantum mechanical event. According to *Vyavahâr naya*, the *parmânu* (atom) is known as 'a particle', whereas according to *Nishchaya naya*, it is known as one 'akash Pradesh' or a field element. *Jain parmânu* has one taste, one smell, one color, and two kinds of touch. Matter is said to have form (*rûpa*). All matters have touch, taste, smell and color. Touch is of eight types: smooth, rough, soft, hard, hot, cold, light and heavy. There are five kinds of taste: sweet, sour, bitter, astringent and acidic. Smell is of two kinds: pleasant and unpleasant. There are five kinds of color: black, red, yellow, white and blue. In general, aggregates of matter have four kinds of touch: smooth or rough, hot or cold, hard or soft and light or heavy. Applying mathematics of permutation and combination on five colors, two tastes, two smell, and four touches, Dravyanuyoga<sup>16</sup> describe  $5 \times 5 \times 2 \times 4 = 200$  types of *Jain parmânu*. It is very alarming and significant information. Science has discovered only 118 types of elements so far as against 200 types as mentioned above. It is mentioned in Jain literature that lightening occurs on account of the *snigdha* and *ruksha* attributes. Prof. G. R. Jain has identified *snigdha* and *ruksha* kinds of touch with positive and negative kinds of electrical charge<sup>17</sup>. Thus, touch (*sparsh*) refers to electrical charge. According to Bhagvati sutra<sup>18</sup>, Jain atoms execute several types of motion-translational, vibrational and rotational which manifest as hot and cold touches (*sparshes*) i.e. Excited and ground energy states which produce sound, light, heat, cold and hot radiations<sup>19</sup>. This is known as the transformation of matter<sup>20</sup>. This very property of transformation of matter may also be thought to be the cause for the production of lasers, nuclear fission and fusion reaction etc.

#### (iv) Einstein's theory of relativity

According to Einstein's theory of relativity, the result of an observer depends on the relative motion of the frames of reference in which the body being observed and observer are situated. Thus, if an astronaut in a speeding spaceship observes the height of cliff of the mountain Himalyas, it will be different than the height observed by an observer standing on the surface of the earth. The calculations can be made using the equation,  $L = L_0 (1 - V^2/C^2)^{1/2}$ , where  $L$ =changed value of length or height,  $L_0$ =initial value,  $V$ =velocity of spaceship and  $C$ = velocity of light. Similarly, the mass of a substance taken on the surface of earth and in the speeding aircraft would be different. It can be calculated using the equation-  $m = m_0 / (1 - V^2/C^2)^{1/2}$ . It is found that mass of a particle increases with its velocity. The doctrine of *anekântvâda* itself includes the concept of relativity, though mathematical derivations are not mentioned in Jain scriptures. However, It is not possible to establish a one to one correspondence between the theory of seven aspects (*Saptbhangi*) and the theories of relativity, quantum mechanics and relativistic quantum

mechanics. Nevertheless, it is seen that the principle of uncertainty is somewhat similar to the inexpressible aspect and the theories of relativity and quantum mechanics are parallel to the Jain doctrine of relativism (*syâdvâda*).

### (v) Einstein`s mass- energy relation

Einstein has given us a very important equations-  $E=mc^2$ , this is the Einstein`s famous mass energy relation which says that if mass of a substance is  $m$ ,  $c$  is the velocity of light then energy which can be produced with the substance is given by the above eqn. Earlier in the classical concepts, mass was supposed to remain constant, there was no question of production of energy from it. The equivalence of mass and energy as suggested by Einstein can also be proved to be there in Jainism. This is based on the very fact that the various radiations seen are due to the transformation of matter indicating that the mass of Jain atoms are being transformed as energy waves, thus confirming that mass energy relation is also there in Jainism.

### 3. Conclusion

There is a close relation between the various theories of *Anekântvâda* as mentioned in Jain literature (agama) and the findings of modern Physics. Many discoveries made in Physics, are already mentioned in Jain literature. It is shown that the achievements made in the field of Physics perfectly match with the *Anekântvâda* of Jainism. The theories of relativity and quantum mechanics provide powerful tools for scientific research. The scientific interpretation of *parmânu* and *varganâ* has opened the way to understand Jain philosophy. The Jain *parmânu* is the smallest indivisible fraction of energy. The Jain *parmânu*, the real quantum of energy, is far too smaller than the quantum of energy, photon, assumed in Physics. The journey of science has been from gross to fine and it has gone to the level of quark. Jain philosophy starts from the ultimate particle *parmânu* and proceeds to describe the gross form of matter. Jain philosophy says that the fundamental constituent of nature is *parmânu* which aggregate into *varganâ* and *varganâ* makes up the gross particles like quark, electron, etc. Jain philosophy presents the subtler form of matter which modern Physics has not discovered so far. Thus Jain philosophy and modern Physics together reveal more complete picture of the physical reality<sup>21</sup>. The doctrine of seven aspects of *Anekântvâda*, not only provides a means for achieving rational perception and rational knowledge, but it also furnishes an effective means of living at peace with self and surroundings. The rational perception, rational knowledge and rational conduct can come about only if we try to understand different viewpoints. Peace and harmony can come only if we try to understand other`s position. It should be pointed out that understanding other`s viewpoint leads to absence of anger (*Krodh*), pride (*mân*), deceit (*mâyâ*), and greed (*lobha*). This results in the prevention of *kârmic* influx (*samvara*) and shedding of *Karma* particles (*nirjarâ*). This is the path to happiness and peace in life and ultimately liberation (*nirvâna*)<sup>22</sup>

### REFERENCES:-

1. Jaini, Padmanabh (1998). The Jaina Path of Purification. New Delhi: Motilal Banarsidass. p.91. ISBN 81-208-1578-5.

2. Dr. L. C. Jain, 'Jain Yoga: The science of salvation' International conference on Jainism at Udaipur,
- 3 . Kundkundacharya`s Samaysara, Samaya Deshna part 1, Achary Vishuddasagar,pp 53-90
4. Dravyasangraha, pp.20
5. Umaswati ,Tattvarthsutra, Commentary by Moanlal shastri, 5/9
6. Samayasara Gatha 29
7. Uttaradhyayan sutra, chapter 28, sutra 9
8. Tattwatha sutra, 32, 37/5
9. Kothari D.S. The Complementarity Principle and Eastern philosophy, Niels Bohr Centenary volume (A.P. French and P.J. Kennedy, eds) Harvard University Press, Cambridge, USA 1985, 325-331.
10. 'Anekantvada' as a physical reality Wikipedia the free encyclopedia
11. . Pramanasagar, *Jain Dharma aur DarshanaShikhsha Bharti*, Delhi 1996 pp. 87
12. Niyamsara, Gatha, 36
13. Tattwarth sutra, 32-37/5
14. Uttaradhyayan sutra, chapter 28, sutra 9
15. Acharya Umaswati`s Tattwarthsutra, 5-23
16. . Dravyanuyoga,564 & M. B. Modi, Jainism, Quantum Physics and Evolving Sritualism, pp.15
17. . Cosmology: old and New by Prof. G. R. Jain, Published by Bhartiya Jnanapeeth, first edition, 1975, pp. viii-ix
18. . Bhagvati sutra, 3-3-153
19. . Acharya Umaswati`s Tattwarthsutra, 5-23
- 20 . Dr. Dulichandra Jain, English translation of Tattvarthsutra, Mumbai,2012, Pp
21. N. L. Kachhara, Scientific explorations of Jain doctrines Pt. 1, Motilal Banarsidas Publishers pvt ltd. Delhi, 2014, pp.216
22. Dr. Dulichandra Jain, English translation of Tattvarthsutra, Mumbai, 2012, Pp 17