



Different domains of nature

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Abstract

Modern science makes domain-specific assumptions for modeling the atomic structure. Hence the domain-based knowledge of atom fails to provide a comprehensive universal understanding of nature. The present atomic model unknowingly ignored the finer domain constituents of atom and also ignored the boundary condition of atom to account for the external linkage of atom with its background.

The new mass-space structure of systems in any domain has similarity with the mass-space structure of systems in other domains due to the basic universal mass-space interactions (Reference). Any system in any domain has a name, form and form-based properties even though all systems constitute the same basic mass and space of the universe. The systems in any domain possesses a system-based property due to the influences (properties) of its constituents in finer domain and the said system in turn influences the system of higher up domain being a constituent of that domain. Thus the universe is an integrated whole of its constituents in different domains. Modern science understands atomic system in isolation i.e. ignoring the interaction links at system boundary (a boundary condition in free body consideration). The boundary condition of a system represents the attachment link with its background. Further it ignores the atomic constituents in finer domains.

Introduction

Our first experience of centrally organized structure of matter came from the study of solar system (sun-planet system and planet-satellite system). Subsequently atoms and galaxies were found to have centrally organized structures. The Solar system is much too larger than the atomic system and again the galactic system is much too larger than the solar system. The structural atoms become structure-less point particles in the map of solar system. Likewise stars also become structure less point particles in the map of galaxy. Thus, it becomes necessary to use different scale units for atoms, stellar systems and galactic systems for study of respective systems. For example, we use angstrom (\AA) for the measure of atomic dimension, astronomical unit (AU) for dimension of solar system (1 AU=Earth-Sun distance) and light years for dimension of galaxies. A light-year is *the distance that light travels in a vacuum in one Julian year (365.25 days)*. The value of angstrom in AU scale becomes zero and the value of AU in light year scale is also zero. Likewise, we evaluate masses of celestial bodies in solar mass units (SMU) and the masses of atoms and molecules in atomic mass units (AMU). The atomic mass in AMU becomes zero in SMU. We consider



molecules, atoms and subatomic particles as particles of micro domain and celestial bodies as bodies of macro domain. We know the structure and features of galaxies but not classified them as systems of macro-macro-domain. Further, we are unaware of the existence of finer domain (say micro-micro-domain) one domain below micro domain. This paper discusses the existence of matter in less known domains of nature and proposes a method for characterizing the domains. The new characterization of domains identifies the existence of finer domain below micro domain and above macro domain. The inter domain similarity of structure and feature helps to rectify our defective concept of the reality of nature.

Discussion

When the physical parameters of matter such as mass, dimension etc. becomes zero in macro celestial body scale, then the domain of such matters is classified as micro domain. Conversely, when the parameters of matter become infinity in micro domain scale units then it is classified as matter of macro domain. Following this classification, the galaxies having infinity mass & infinity dimension in solar system scale may be classified as matters of macro-macro domain and the light particles having zero mass and zero dimensions in micro domain scale units may be classified as matters of micro-micro domain. The author, however, prefers a different classification of domains from the structural features of centrally organized systems.

A new classification of domains of matter from structural features

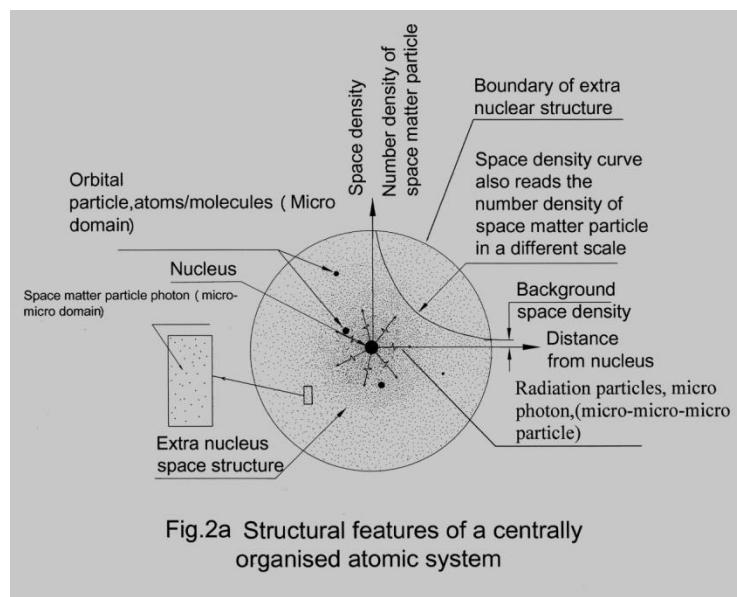
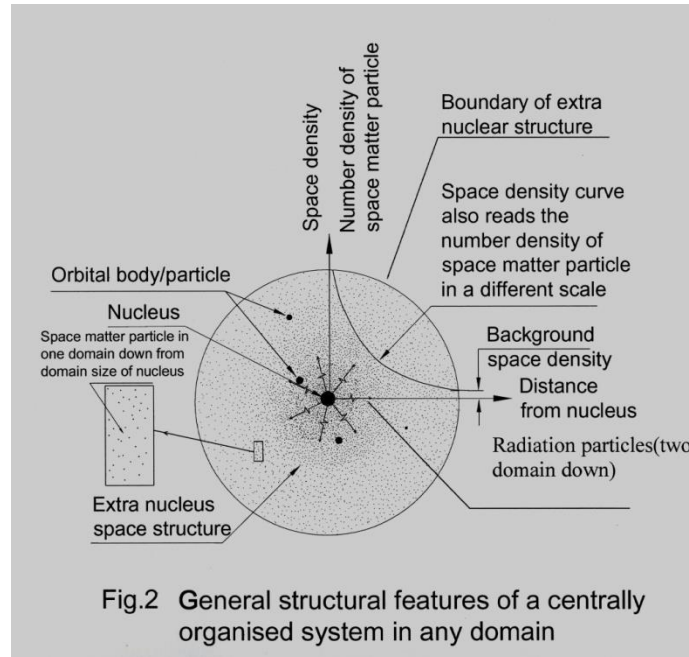
Examining the solar system, we find, the nucleus and orbital bodies are bodies of macro domain. The space matter particles in extra-nuclear space structure (atmosphere) of a macro celestial body system are particles of micro domain which is one domain lower than the domain size of the nucleus and the orbital bodies. The radiation particles (light particles) radiated from the sun, the nucleus of solar system, are particles of micro-micro domain which is two domains down from the domain size of the nucleus and orbital celestial bodies. The structural features of centrally organized systems in all domains of nature may be generalized in respect of the domain size of nucleus, orbital body, space matter particles and the radiation particles. **According to this new generalization the orbital bodies and the nucleus belongs to same domain; space matter particles of extra-nuclear space structure are one domain down the domain size of nucleus and the radiation particles of nucleus are two domains down the domain size of the nucleus (Fig.2). Following this general characterization, the domain sizes of different constituents of atomic system, solar system and galactic system are presented in Table 1 and schematically shown in Figs. 2a, 2b and 2c respectively.**

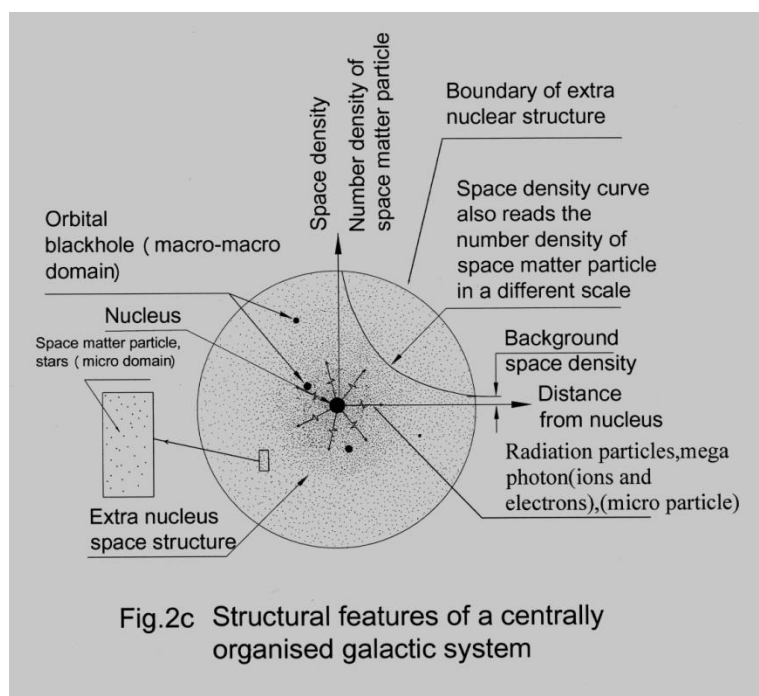
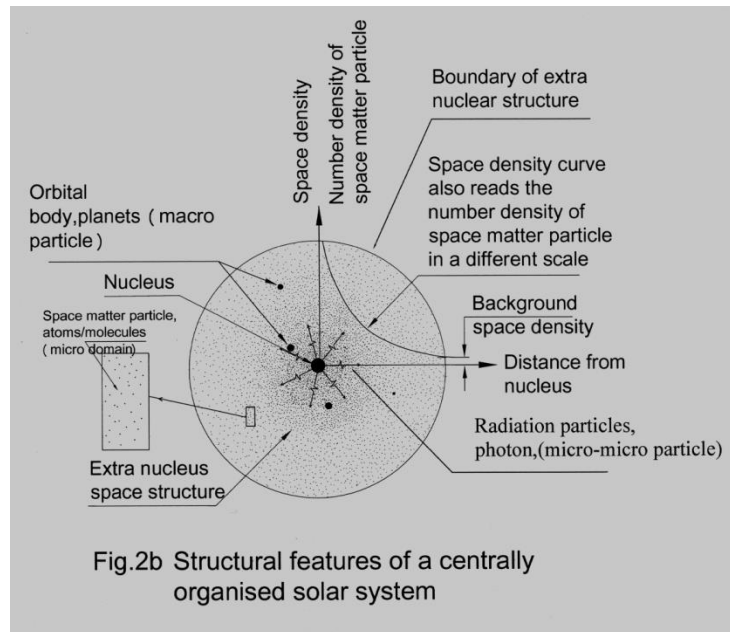
If uniformity prevails in nature the atomic system (micro particle system) has to be similar with solar system. The nucleus with orbital electrons would be classified as micro particles, the unknown space matter particles present in extra-nuclear space structure of atom would be particles of micro-micro domain (light particles/photons) and the unknown continuous radiation particles from atomic nucleus would be classified under micro-micro-micro particles (micro photons). Lack of insight to radiation of micro-photons from atomic nucleus has given us the impression that atomic nuclei do not radiate energy. The light particles have mass in micro-micro domain scale, and they carry non-electric charge, thus light particles have placement in atomic structure as well as in inter-atomic space.

Table-1

Domains of different centrally organized systems and their constituents

Systems of different domains	Nucleus	Orbital body/particle	Space matter particles	Radiation particles
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Galaxy(Macro-macro system)	Blackhole at centre of galaxy(macro-macro domain)	Orbital blackhole(Macro-macro domain)	Stellar bodies(Macro domain)	Mega photons, (ions and electrons)(Micro domain)
Solar system(Macro system)	Sun(Macro domain)	Planets(Macro domain)	Atoms and molecules(Micro domain)	Photons(Micro-micro domain)
Atoms (Micro system)	Nucleus of atom (Micro domain)	Electrons (Micro domain)	Photons (Micro –micro domain)	Micro photons (Micro-micro-micro domain)
Photons(Micro-micro system)	Nucleus of photon(Micro –micro domain)	Photons(Micro –micro domain)	Micro photons(Micro-micro-micro domain)	Micro-micro photons(Micro-micro-micro-micro domain)
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Again, for uniformity of nature the galactic system (macro-macro system) has similarity with the solar system. The nucleus of vast galaxy is expected to be a huge body in the dimension range of so-called event horizon of the black hole. It is difficult to comprehend the existence of such huge bodies thus the bodies were conceptualized as black hole. **The space matter particles in the extra-nuclear space structure of galaxy are one domain down the domain of galactic nucleus hence the stars in the galaxy are the space matter particles in the space structure of galaxy and not orbital bodies.** There are also orbital black holes which have similarity with planets of



solar system hence they are the orbital bodies of galactic system. And the galactic nucleus radiates micro particles (ions and electrons) which are two domains down the domain size of galactic nucleus. Therefore, the nucleus of galaxy is not visible, and this result our erroneous concept of black hole. The ions and electrons radiated from galactic nucleus do not reach the earth as they get trapped in the space medium.

It is of no wonder, if the light particles (micro-micro domain of matter) are found to have nucleus and extra-nuclear space structure containing micro photons as space matter particles and the nuclei of light particles radiating micro-micro photons. The cause of red-shift of light coming from distant galaxies is better understood from loss of energy through radiation and not due to running away of galaxies from the earth. Hence, the concept of expanding universe may not be a reality. The velocity of light in a definite medium is constant and we failed to understand the cause for the same. But the new anticipated mass-space structure of light particles with nucleus and extra-nuclear space structure and the new mass-space interactions discussed elsewhere by this author has answer for different constant velocity of light in different medium including the so-called vacuum medium. Thus, it is not the solar system and atomic system alone which have similarity of structure and features, but all centrally organized structures (galaxy, solar system, atomic system, light particles etc.) have similar structure and feature. This simplifies our understanding of decay of matter in all forms. Decay of structure with non-decaying constituents (atoms) is unthinkable.

Defects in early planetary atomic model

In the existing concept, atomic nuclei do not radiate energy continuously like the radiation of the sun in continuous-spectra. This erroneous conclusion is based on the presumption that energy is always radiated in the form of light particles (photons). Further, our experimental instruments have limitation to establish the radiation of micro photons.

The early planetary model of atom was a failure because the atomic model considered only the nucleus and orbital body for modeling atom by ignoring all other features of solar system. According to this author, if atom is modeled once again in the light of solar system by incorporating all features of solar system, then the model would explain all atomic phenomena including the spectra of atom. And further the model would entertain the vital cause to effect analogy and entry of commonsense. This is discussed in a separate article.

Mass and charge of light particles

A mass less particle has no place in the structure of matter thus light particles being mass less in the present concept are not considered for placement in atomic



model. Though the mass and dimensions of light particles is zero in micro domain scale, they have mass and dimensions in micro-micro domain scale. Modern science is yet to conceptualize and develop a mass scale unit for matters of micro-micro domain to know the matter value of light particles. The reality is that light particles are micro-micro domain particles, hence finer domain scale units of micro-micro domain is required to understand their mass, dimension and structure. In the new concept, light particle being particle of matter in finer domain (micro-micro domain) has its placement in atomic structure and in interatomic space. This aspect is overlooked in developing atomic model and their existence in inter atomic space medium is also not considered. Lack of perception of matter values in particles of finer domains (below micro domain) has led us to conceptualize the non-materials science (spiritual science). Such branching of science is a human creation and does not exist in nature. It may be mentioned here that Vedic science explores nature with universal concept i.e. assuming similarity between microcosm & microcosm and does not make any domain specific assumption.

The light particles in micro-micro domain is expected to have the nucleus & extra-nuclear space structure and carry charge like the atomic particles in micro domain for uniformity of nature. The charge present in light particles is non-electric [1] in nature therefore light particles do not take part in electric charge interaction. Hence one cannot conclude whether light particles are neutral particles as they may be carrying non-electric charge. The light particles, in the new concept, having nucleus, extra-nuclear space structure and carrying mass & non-electric charge has scope to explain different phenomena of light without the wave concept (Reference).

Cause-to-effect analogy

The cause to effect analogy is the basis of macro domain physics, spiritual science, Vedic science, biology, homeopathic science, astrology etc. But this analogy could not be retained in present atomic physics due to lack of awareness of existence of matter in finer domains.

When both event and cause lie in perceivable macro domain, then there is no difficulty in knowing the cause of an effect. Again, when the cause of macro event lies in micro domain it is also possible to know the cause of the event from micro domain analysis. But when the cause of micro event lies in the unknown micro-micro domain, physicists fail to find the cause of the event because modern science is yet to explore the micro-micro domain physics of matter.

How the incomplete atomic model yields result?

Quantum mechanics is able to explain the atomic phenomena by making quantum assumptions. There is no basis of the quantum assumptions. Analysis of



quantum assumptions is feasible only with the knowledge of micro-micro domain physics. Thus, to understand the cause of micro phenomena and the basis of quantum assumptions, we need to explore the micro-micro domain physics. The quantum assumptions of micro domain physics unknowingly proxy the functional role of fine structure (micro-microstructure) of matter thereby the atomic model is able to explain the atomic phenomena (spectra of atom).

Is the assumption of kinetic theory of gas a reality?

Any defective concept on reality of nature requires correction measures to predict different aspects of nature. Both defective concept and unnatural assumptions get established as they collectively predict nature. For example, the defective atomic structural concept requires the supporting Kinetic theory of gas to correctly predict the behavior of gas (laws of gas). The new atomic structure and the new mass-space interactions [2] have the scope of explaining the laws of gas without the assumption of random motion of atoms and molecules in gas. This author has modified the atomic structure by visualizing the fine structure of atom composed of micro-micro-domain particles (light particles) and this new atomic theory does not require the kinetic theory of gas to explain the laws of gas. Hence the kinetic theory of gas becomes redundant.

How real is the random motion of molecules?

The new understanding of different domains of nature and the new knowledge of similarity of structure and features in all domains gives us the scope to examine the state of rest or of motion of space matter particles (atoms and molecules) in the extra-nuclear structure of the earth. The stars are the space matter particles in the extra nuclear space structure of galaxy, and they are visible to us, hence their state of motion is observable. For uniformity of nature there should be similarity in the motions of space matter particles in terrestrial system as well as galactic system. The stars in the galaxy do not make any random motion. Therefore, the hypothesis of random motion of atoms and molecules in the atmosphere of the earth (in gaseous state of matter) is not a reality. Hence the kinetic theory of gas is also not a reality. This author has proposed alternative theory for the laws of gas without random motion of molecules (Reference).

Similarity of structure in different domains

We directly observe the internal structure of solar system as we live within it whereas we study the atom from external interaction. The internal structure of micro particles (atoms, molecules and subatomic particles) are not directly observable for study. Scientists have developed theoretical models of atom to justify the spectral features of atom. The discrete spectra of atomic emission and the continuous spectra of solar radiation is big hindrance in finding structural similarity between solar system and



the atomic system. The discrete emission spectra of atom are produced from extra-nuclear structure of atom only **when the atom is excited externally or disturbed internally**. On the other hand, the solar radiation comes from the nucleus (the sun) in its normal state (without excitation). The two distinctly different phenomena cannot be compared while finding similarity. We need to excite the solar system to know the nature of emission spectra of solar system. These emission spectra of solar system in excited state can only be compared with the emission spectra of atom in excited state for finding similarity. The author has noticed the discrete nature of spectra of solar system when Halley's Comet crosses the orbits of planets. Thus, both atom and solar system reveal similarity in producing discrete nature of spectra in excited states.

Now let us examine the similarity between the natural radiation from nucleus of solar system and that of the nucleus of atomic system. We have already discussed the natural radiation of micro photons from nuclei of atoms. The natural continuous radiation from the sun and atomic nucleus are similar. All other differences between solar system and atomic system are resolved by discovering hidden similarity (Reference).

Conclusion

The hidden similarity between atomic system and solar system reveals that all centrally organized systems in different domains such as solar system, atomic system, galactic system and light particle system have similarity in structure and feature. This new knowledge simplifies many complex problems such as: Why the velocity of light is constant in vacuum? Is there a need of dark matter to explain why the outer stars of galaxy revolve slowly? What is the true significance of Black-hole? What is the structure of vacuum? Whether nucleus of atom radiates energy?

Science has now the scope to explore the unknown finer domain (spiritual domain) of nature. Spiritual science deals with light and energy but not mass. The light particle in the new concept has mass in finer domain mass scale unit hence has existence in structure of micro particles and as space matter particle in space structure. Science meant to explore nature should increase its spectrum for a comprehensive understanding of materials science and spiritual science.

Reference

1. Unpublished works of this author, likely to be published in the next issue.
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3. <https://philosophyofnature.org.in/books>.