

Questions and Answers on Space Vortex Theory (SVT)

Q1. Where is the need for a new theory on space and matter when we have relativity and quantum physics for a century now? How do you define Space?

A1. A new theory is required to prove that it's the medium of space that is more fundamental entity that creates universal matter and fields of matter, rather than the modern concepts that are the other way round.

A three dimensional volume of absolute vacuum (without any matter that possesses mass), with or without fields (gravity, electrostatic, electromagnetic), is defined as a “mass less volume of space”.

Q2. You mean “fields” have no mass? But electromagnetic field and photons in modern physics are assigned with mass property –electromagnetic mass?

A2. Yes, fields have no mass-property as per the SVT; all fields, be that gravity, electrostatic, magnetic, electromagnetic, are shown to be mass-less phenomena.

Q3. What was the main subject of your inquiry at the start of framing this theory?

A3. The basic aim initially (mid seventies of 19th century) was to frame a hypothesis that reveals meaning of mass-property of bodies in general, and mass and charge in electron structure in particular. But later, the theory extended to gravity, light, nuclear forces, planetary system, and cosmic forces between galaxies, creation of cosmic matter etc.

Q4. How come you are trying to revive an ether theory now when, as is well known, ether theories ended up in contradictory and hypothetical properties and were abandoned, as generally believed, with the advent of Einstein's special theory of relativity (STR, 1905).

A4. This is because the genesis of “mass” and “charge” in electron structure has not been convincingly unearthed theoretically by the 20th century physical theories. And as regards the problems of contradictory properties of the 19th century-ether, they get resolved by postulating a totally “mass less” fluid ether. The ether postulated in space vortex theory (SVT) is: the medium of three dimensional absolute vacuum without matter (matter, as conventionally understood), with are without fields. It is referred as nonmaterial- “space”— “nonmaterial” signifying absolutely zero mass, zero viscosity, zero rigidity, incompressibility, continuity, homogeneity.

A specific example as to why the 19th century ether properties appeared contradictory is this: it was then argued that if light is considered as a “mechanical” disturbance in a “material” medium then the quantity: $(\text{elasticity}/\text{density})^{1/2}$, which is proportional to the speed of disturbance in any medium, must be very high. Even a

low density of ether will require its elasticity to be as high as that of steel. Low density and high elasticity for the same substance are contradictory properties. But if ether is postulated “non material with absolutely zero mass” and light is not taken as a “mechanical” disturbance in ether, then there is no contradictoriness. In other words, neither light nor ether is to be postulated as material phenomena.

On the question of “hypothetical properties”: “Mass less ness” of space may appear strange, but to derive mass-property from electron’s spatial structure **from the first principles**, one can not start specifying mass and density properties to space , howsoever small the values are. In fact, none of the properties of matter like compressibility, discreteness, viscosity, density, mass etc. are postulated for space because all these properties of material media follow after creation of electrons and their assembly into particles/atoms/molecules of matter.

Q5. But Einstein’s STR starts with the premise of “empty space” and also does not assign any velocity vector to any point of empty space?

A5. True, but STR’s “empty space” is a “void’, a “nothing ness”.

In SVT, as defined in A1, empty space is a “vacuum with or without fields” and void is defined as a “field-less, energy-less volume of nothingness”. Einstein has followed, in STR, Democritus’ philosophy of “atoms and void” which is close to the Newtonian philosophy as well but, unlike the Cartesian philosophy, the origin and process of creation of universal matter has been left aside. The principles of SVT on space and matter are closer to the Cartesian philosophy, though more specific and quantitative due to immense scientific knowledge on structure of matter gained since then.

Q6. So, how can you derive “mass property” postulating a “mass less” space?

A6. Refer to Fig.2-2 and Fig.2-3, which show a space vortex and a section of the space vortex identified as an electron. The center of the electron has a spinning interface at the maximum speed of light (c), which encloses a spherical void –a region of discontinuity in space medium. [Linear motion of a space point is referred as “velocity field”]. Due to space-circulation creating maximum velocity field, its flow is broken into a void. Mass of electron, as defined, is directly proportional to the volume of the void enclosed within the interface.

Q7. How is void created? How does it create mass-effect?

A7. In addition to the postulate on the nonmaterial property of space, the additional postulate of SVT is on a limit to velocity gradient when fluid space is under circulation, and also that the universal space is inherent with motion.

In a plane space-vortex (Fig. 2-1, Irrotational vortex), a space point circulating at velocity v at a circle of radius r will have a velocity gradient v/r and outward acceleration v^2 / r . (velocity gradient v/r can also be called: angular rotation) At limiting velocity gradient in the space circulation, $v = c$, and $r = r_e$ when the outward-

acceleration field (centrifugal acceleration of space point) reaches its maximum value c^2 / r_e , due to which the space-circulation breaks down into a void of radius r_e . Now, with void created, space tends to fill-in and the outward acceleration field reverses its direction (Fig.2-3) on the interface which remains dynamically stable due to zero viscosity of space. Due to any tendency of space to close-in, the void-radius decreases infinitesimally, thus increasing the velocity gradient on the interface-space circulation and restoring the initial radius. **The electron space vortex is dynamically stable eternally.**

Creation of void pushes out fluid-space from within the void at electron center, radially out at velocity c , into the incompressible universal space as a spherical front that energizes the universal space gravitationally creating an inward acceleration field at each point of space (Fig.4-1a). The gravitational field so created stays in space permanently as long as the interface spins and produces effect of mass by interacting with other masses through its gravity field. **Gravity field of electron is a structural component in the vortex of electron**

Q8. How is charge of electron explained physically and quantitatively?

A8. The surface integral of velocity field on the interface of electron is defined as electron charge q_e . The new **charge-equation** discovered in SVT is: $q_e = (\pi / 4) 4 \pi r_e^2 c$, which has dimensions of $[L^3 T^{-1}]$. From the experimentally discovered value of electron-radius and using charge-equation, electron radius is derived: 4×10^{-11} cm.

Q8. Is not the electron radius you derive from SVT is about 100 times more than the presently accepted value?

A8. Very true, but look what George Yankovsky has written in "Philosophical Problems of Elementary Particles Physics (1968): "There are several lengths that might aspire to be characteristic of the dimensions of electron. If we proceed from modern theoretical electrodynamics, which has been established better than any other field theory, the conclusions seem to be that the electron has the enormous dimensions, not 10^{-13} cm, as expected from classical physics, but a hundred times greater!" This quotation supports correctness of the charge-equation.

Q9. With point-charge model of electron, question has been raised as to why an electron, due to high density packing of the same charge at a point, does not split and explode? Also, the electrostatic potential energy in the field of electron, if it is a point charge, should be infinite.

A9. Both these difficulties disappear in the vortex structure. Firstly, the central void is energy-less. Therefore, lower limit of radius for energy integration starts at r_e and not zero, which does not give infinite energy in the field. Secondly, the interface of electron is subjected to an inward acceleration field created by the space circulation which results in proportionate pressure from space. [Abdus Salam, the Nobel laureate,

had raised this question of electron's self action and why it does not split apart. He appreciated mass and charge equation of SVT when the same was referred to him by the author of SVT, commenting that with these new ideas the problems may get resolved]

Q10. How do you explain positive and negative charges?

A10. If electron is termed as "negative" charge then an oppositely rotating vortex (of electron) relative to electron is a positron with a charge that can be termed "positive" charge (Fig.2-5). As seen in the figure unidirectional velocity fields in the vortices attract while oppositely directed velocity fields in the vortices repel.

Q11. What are the fields in electron structure in addition to gravity field you explained earlier?

A11. Inward acceleration field at the interface falls radially from the electron center. Line integral of this acceleration field is defined as electrostatic field of electron. When electron moves along its axis relative to space, the circular streamlines are seen as magnetic field. When electron accelerates linearly or in a circle, the gravitational and electrostatic fields are seen as electromagnetic field. All these fields are quantitatively derived in SVT.

Q12. Can mass-energy equation be derived from electron structure?

A12. Yes, Einstein's mass energy equation is derived using the new mass-equation of SVT. Structural energy of electron comes to: $(4/5) m_e c^2$.

Q13. How does annihilation of electron and positron take place? Is it explainable in physical terms?

A13. ***All phenomena and processes in SVT are explainable in physical terms.*** In case of annihilation the unidirectional velocity fields (Fig. 2-5) in between the particles attract till the particles are superposed and oppose each other's spinning interfaces, thereby destroying central voids that get filled in by the neighboring fluid-space (Fig. 8-2).

Q14. What happens to the fields that existed in space beyond the interface earlier?

A14. All the fields, gravity, electrostatic, electromagnetic, now start dying away starting from the interfaces of the now nonexistent particles and this process is seen as a light-effect (Fig.8-2).

Q15. What is the wavelength of this light?

A15. The wavelength is equal to electron radius—the strongest gamma pulse in the universe.

Q16. What are the universal constants as per SVT? Do the universal constants presently recognized: electron mass, electron charge, speed of light, Planck's constant remain or get reduced?

A16. Only two universal constants: speed of light (relative to space) and electron radius are sufficient to derive all the other constants. These two constants also, when expressed as “maximum angular velocity” in a space circulation: $\omega = c/r_e$, reduce to only one universal constant, namely, limiting space circulation of space, ω .

Q17. Is electron the only fundamental particle as per SVT?

A17. True. The postulates of SVT do not permit more than one **stable** particle, other than electron, which can be termed fundamental. In particle accelerators, there could be several microcosmic space vortices produced during collisions, creating charge-effect transiently, but these are not stable entities forming structure of neutron / proton, nuclei.

Q18. Before we go to nuclear structure, how do you explain and derive the surface gravity of the sun and earth?

A18. The solar system is a huge space vortex similar to the Cartesian cosmic vortex. The velocity field in the solar vortex falls inversely as the square root of the distance from the sun, carrying the planets at orbital speeds as per Kepler's laws. From the orbital motion of the planet mercury (47.9 km/s), velocity field in the solar vortex at the sun's surface is determined. It is noted that the space circulates at a speed of 436.7 km/s at the sun's surface carrying gaseous matter. This value of space flow is confirmed by the observed average wind velocity on the solar surface (NASA report). The inward acceleration field due to this space circulation around the sun comes to 274 m/s^2 , which causes surface gravity of the sun. Similarly, from the orbital motion of moon, maximum circulation of space around the earth at ionosphere level is derived as 7.8 km/s towards east. The inward acceleration field due to this velocity field comes to 9.55 m/s^2 , which is close to the accepted value of the earth's surface gravity. Surface gravity of all the planets (with axial rotation) has been calculated similarly by finding out space circulation enclosing them.

It is seen that the above derivation of surface gravity does not take into account masses of the sun and earth.

Q19. What holds nucleus together?

A19. Just as in electron structure, space exerts tremendous inward pressure on the interface (A7), so also a proton is enclosed within a space vortex that creates inward

pressure on its core assembled out of electrons and positrons (Fig 7.4). On similar lines, each nucleus is enclosed within a space vortex that creates inward pressure from space, holding against repulsive forces due to protons in nuclear structure. As explained above, cosmic bodies enclosed within space vortices experience surface gravity as a pressure from space.

Because, modern physics does not recognize any spatial forces due to vortex effect around nuclei acting inward against repulsive electrical forces within the nuclei, nuclear theories posit strange explanations.

Q20 Explanations to photoelectric effect established quantization of light and gave a start to quantum theory. Any comment on this?

A20. In photoelectric effect, the photo electrons released carry their own kinetic energy that they possessed in their orbits before interaction with light. Einstein mistook this energy to have been absorbed from the interacting light. A single electron can not absorb or emit energy like a bulk of matter (assembly of atoms/molecules) simply because structurally it has a void-center. Neither any part of its field structure can be detached and emitted. Photons concept is erroneous. Interaction with “shell structure” of light can explain photoelectric effect without recourse to quantization of energy. [There are subtler logics involved in these explanations].

Q21. What is the physical significance of Planck’s energy equation as per SVT?

A21. The Planck’s energy equation: $E = h f$, fundamentally, signifies energy produced in f nos. of light pulses produced *in unit time* corresponding to f nos. of oscillations of an atom. No part of the structural field energy of the oscillating atom, including the orbital electron’s fields, is lost in this process. Refer Fig.7-5, the simplest hydrogen atom. The positive charge of the proton (nuclear vortex) is nullified by the negative charge of the orbital electron due to their opposite vortices. The atom beyond the orbital electron, thus, becomes neutral (absence of vortices creating electric field) and has only its gravity field spread out in the whole space. When it oscillates, light is produced due to time-varying, gravity-potential-effect—the process starting from the neighborhood of the oscillating atom. Similarly, during thermal vibration of atoms, light is produced as an effect in space due to time varying gravitational potential.

The orbital electron’s vortex in hydrogen atom, moving in circle around the nucleus, is tied with nuclear vortex electrically, and can not change its orbit. Carried by the interaction of the vortices, it does not lose its energy—either kinetic or structural. The present concept that orbital electrons in atoms may lose energy and fall-on to nucleus, and change of orbit emits energy, is clearly a misconception as per SVT.

Q22. How does an orbital electron in photoelectric process get released from its orbit?

A22. A light shell with wavelength λ has an acceleration field c^2 / λ (inward, pointing towards source); and an orbital electron too with velocity v and orbital radius r has an acceleration field v^2 / r (inward, pointing towards nucleus). When a light shell pulse meets an orbital electron, the superposition of the above two opposite acceleration fields makes the electron free of its vortex-bond and it shoots out with the kinetic energy that it possessed in the orbit.

Q23. What is the process of creation of universal matter and how deep is the universe?

A23. Matter is being created even today at galactic cores—the hydrogen jets at nearly speed of light. It's the conversion of spatial vortices (spatial motion) inherent in space primordially, that is the basic process of matter creation starting with electron. An electron projected at speed of light and retarded by its own inward gravitational field will retard to zero speed after traveling a distance of about 3.3×10^{31} cm. That determines the minimum universal radius.

Q23 How do you picture the universe?

A23. The universe is a dynamic space of primordial reality, a mass less volume of energy that extends into a sphere with a radius of about 3.3×10^{31} cm, and exists in an infinite void of non reality (Fig.9-1).