

# Interstellar Elastic Hypothesis for Origin of Solar System

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**Abstract:** *This research paper is a sincere effort towards presentation of a very new and unique speculation to solve all most all questions of the origin of solar system directly related with the basic concept of evolution of solar system. It has been speculated in this paper that initially a binary star system came in existence in celestial space. In which both stars were rotating on its axis and going on their galactic revolution. One of these binary star systems was our primitive sun and other was a companion star. The companion star was very giant size in compare to primitive sun and nuclear reaction was going on both these stars with different rate. The rate of nuclear reaction called nuclear fusion of companion star was many times greater than the primitive sun. During the galactic revolution the binary star system started to attract a nebula having large quantity of interstellar dust. When the nebula came very close to the binary star system then the interstellar dust particle started to winding on an imaginary line of contact between the wide gape of the stars and dark matter converted into a shape of thin cylindrical tube having thicker middle and taper end. The process of nuclear reaction was going on as usual way on companion star as well as the process for formation of embryos of future planets were also as usual inside the thin cylindrical tube, Just when the formation of embryo was in its final stage the companion star of binary star system violently exploded. As a result enormous dust particles spreaded in region surrounding collapsed companion star and millions of heavy, middle and small size shattered body scattered in sky. When these shattered bodies were just in its flying stage, the recoil of gigantic stellar explosion started to throw away the nucleus of companion star out of the gravitational field of primitive sun, and the rotating cylindrical tube (filament) instantly started to expand along with nucleus like an elastic thread. After covering a very large distance up to critical point of elastic limit the nucleus with a small portion of filament (like a right circular cone) broken out and lost beyond the gravitational limit of primitive sun, and other balance part of cylindrical tube contracted back with heavy momentum and formed an under critical damped wavelike shape of filament. As the embryos were still rotating inside the contracted thin cylinder now started to open its stranding by reverse direction rotation with very large and different speed according to its size and shape, due to which different embryos become separate from each other and started to attract several number of heavy, middle and small size of shattered body those were approaching to primitive sun. However numbers of shattered body captured by different rotating embryos were within some particular region surrounding them, but other remains captured by primitive sun. The heavy shattered body captured by embryos of future planet performed two kinds of properties. Some number of them entered in the broken cylinder inside which embryos were rotating with very high speed and some could not be able to enter the region of broken cylinder with embryos. Now those heavy shattered body entered inside the broken cylinder started to make revolution around the rotating embryos and after time span fitted together to form a large size of planet. The other heavy shattered body however came in influence of embryos but could not be able to enter inside the broken filament started to make revolution of the embryos following a certain physical phenomena and become Satellite. This way this research paper is fully capable to give explanation for almost all peculiar characteristics feature of the solar system. The problem of great distance between Planets and the Sun, Problem of heavy element of material for Planets than the Sun, Problem of large angular momentum of the Planets, Similar direction of rotation as well as plane of revolution, The problem of lighter constituent elements of the planet of the outer circle of our solar system, Peculiar arrangement of Planets on the basis of its size, Existence of Pluto on the outer circle despite having heavy element, Formation of planetary system. (Planet with Satellite), Cause behind of occurrence of comet. Beside the same on the basis of this hypothesis number of undefined astronomical observation can be explain. As well as the possible cause behind occurrence of Venus transition also may be explain, with the help of derived & introduced type path of revolution for planets (Earth & Venus).*

**Keywords:** ISEHOSS

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## 1. Introduction

As we are familiar that supernova like explosion takes place often in space and large quantities of gaseous and dust particles are also found scattered in shape of nebula. Hence it is obvious that these phenomena would be most appropriate to utilize for any speculation of origin of solar system. It is estimated that in our galaxy (the Milky Way) about twenty stars suddenly exploded with brilliant light and became abnormally luminous or extremely intense light called nova or supernova respectively. The explosion in nova or supernova is possibly related to atomic reaction.

The physical happening of supernova in space, and existence of dust particles in space are hypothesized by different philosopher from the beginning, but how those clouds of gas and dust particles converted into planet is still an astronomical puzzle.

Human being has been curious about the origin of solar system and Earth from the ancient time and various hypothesis has been put forward from time to time on the basis of imagination, speculation and as well as observation, but none of these, however can be considered to be wholly satisfactory or widely acceptable.

Beside on the basis of scientific studies and evidences, some conclusions are derived in respect of origin of solar system and Earth, about which there is not much difference of opinion. For instance, it is now generally believed that the solar system of our and other galaxies came into existence about 7000 million years ago and possibly the earth came into existence about 4500 to 5000 million years ago. We divide the scientific view regarding the origin of solar system and earth into two categories.

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1<sup>st</sup> – Monistic hypothesis or parent hypothesis in which the evolution of solar system is believed to have taken place from a single star, nebula or both. These processes are called the evolutionary process of the origin of the solar system. The chief protagonists of this school of thought are Kent, Laplace, Lackyer, Hoyle, Weizsacker and Kuiper.

2<sup>nd</sup> – Dualistic hypothesis, Bi-parental hypothesis, in which the planets of the solar system are believed to have originated as a result of coming together of two stars. In this school of thought we may include the planetesimal hypothesis of Chamberlin and Moulton, the Tidal hypothesis of Jeffrey's, the binary star theory of Russell and few others.

However both these monistic and dualistic hypotheses have their own merits or demerits but existence of interstellar dust or nebula is fully acceptable. Besides the same the happening of explosion of star is also basically physically true, whether the cause behind the explosion is exactly nuclear fusion or any other physical cause still a subject of physical evidence.

The basic assumption of this hypothesis is based on both types of school of thoughts. 1<sup>st</sup> existence of binary star system based on the supernova hypothesis of F. Hoyle and R.A. Lyttleton and Secondly existence of nebula based on interstellar dust hypothesis of Otto Schmidt.

Because the Interstellar dust hypothesis is considered as a most acceptable hypothesis to solve all most all question of peculiar characteristic feature of solar system. Hence basic assumption of this hypothesis is taken here for Interstellar Elastic hypothesis. Now we are familiar that only one drawback of the interstellar dust hypothesis, that how the primitive sun (single star system) could be able to capture or attract the interstellar dust towards it, keep this hypothesis away from fully and widely acceptable. Hence, if replace the consideration of single star system by binary star system, then a large portion of drawback may be overcome. For this purpose acceptance of basic assumption of supernova hypothesis would be the best alternative, because basic assumption of supernova hypothesis is based on binary star system and binary star system may attract interstellar dust as per cosmological calculation. If the basic assumptions of both these hypotheses are combined each other in such way that the interstellar dust might be captured or attracted by binary star system then a new form of hypothesis came in existence, giving some specific explanation for origin of solar system.

If the interstellar dust attracted by binary star system then it will not represent a saucer like shape around the sun in initial stage. The initial stage of shape for interstellar dust between wide gap of binary star will be different. May be possible that gas and dust particles accumulated between wide gap of binary star system in shape of filament as introduced by James Jeans under influence of some physical cause and when one of the binary stars become supernova the filament behaved like an elastic and at first it became under critical damped wave path shape and finally converted into a saucer like shape around the primitive sun. As we are familiar that planets of solar system are orbiting the sun of such distance from the sun that the distance of ascending Planet is approximately twice the distance from the

descending planet. Hence when all the planets come in a row then a under critical damped wave path like shape can be imagined. This way, if interstellar dust particles accumulated between wide gap of two stars then a filament type shape is possible and it may behave like elastic.

This way on the basis of assumption for supernova and interstellar dust hypothesis a new hypothesis may be imagined which represents an elastic type phenomena between binary star system, and a very peculiar and unique hypothesis may be brought in existence for explanation of origin of solar system. This research paper is a sincere effort in this direction.

## 2. Description

There were two stars (Binary star) system going on their galactic path of revolution at the initial stage of origin of our solar system. On their galactic revolution a specific stage came in existence that direction of revolution and rotation become similar for both these stars. At that stage both came in a specific condition due to gravitational attraction force, it became coplanar. One of these binary stars was our primitive sun and other was a companion star. The size of companion star was much larger than the primitive sun and nuclear reaction called nuclear fusion was going on both these stars, but the nuclear reaction of primitive sun was at its initial stage whereas the nuclear reaction on companion star at its final stage. With the passage of time when all hydrogen atoms required for nuclear fusion consumed, the companion star started to collapse and violently exploded.

In between the stage when both stars became coplanar and stage of companion star violently exploded. Some other happenings were also going on between the space gap of companion star and primitive sun. This happening was as follows.

When both the stars going on their path of galactic revolution a large size nebula having interstellar dust came across the path of galactic revolution and started to winding up around an unseen axis (An Imaginary line of contact between binary stars). Because both these stars were under influence of gravitational attraction force as well as polar magnetic attraction force. Hence due to magnetic attraction force between opposite poles of both stars a magnetic line of contact would have come in existence which would be unseen but actual. Because nebula contained large quantities of gas, dust, atoms, molecules and ions. (Charged particles) Hence these charged particles initially would have started to make revolution about the magnetic line of contact and laterally other atoms, dust and gaseous particles started to follow the same process like whirlwind or whirlion. When all the dust, gas, ion particles wound up around the line of contact after a passage of time nebula converted into a thin cylindrical disc between the wide gap of two stars, and cylindrical disc would have seemed like a rotating cylindrical disc. As both the stars were under influence of gravitational attraction force along with magnetic pull, hence all the particles of nebula directed toward the center of mass of binary star and entered into the gap of binary star system and converted into a thin cylindrical disc. Now because the cylindrical disc was rotating under influence of

attraction force from both side, hence all the denser constituents of interstellar dust started to come closer to the respective star and particle also started to redistribute itself according to its mass, density and dimension under combined impact of following type of motion.

- 1) Rotational motion of both star.
- 2) Gravitational force exerted by both star on the rotating cylindrical disc of interstellar dust.
- 3) The magnetic attractions pull by both star on the rotating cylindrical disc of interstellar dust.
- 4) The angular momentum of the particles of interstellar dust of the rotating cylindrical disc.

After redistribution of particles the cylindrical disc converted into a thin tube like a filament (by James Jeans) having thick centers and tapping end.

Now collision among the dust particles started the process of aggregation and accretion around the bigger particles. Which become embryos of the future planets. This way the embryos of different planets came in existence and embryos of Mercury, Earth, Mars have had heavy elements and located in primitive sun's direction and embryos of Pluto or may be any other planet of some different size having heavy element constituents taken place in direction of companion star's side, because heavy and denser particle also redistributed and moved closer to companion star. All those embryos of future planet having lighter element constituent taken place at the several location in middle portion of the filament. This was a specific stage of origin of solar system when a very unique event taken place. However a very long period passed in conversion of nebula into a shape of filament and finally in formation of embryos of different future planets but up to this stage of formation for solar system the entire hydrogen atom of companion star consumed and companion star started to collapse and finally violently exploded. Due to violent explosion of companion star enormous mass of dust, thousands number of small, heavy and middle size shattered body spreaded in the space and region surrounding the centre of explosion. Besides the major shattered body gaseous matter in shape of cloud also coming out and covered a vast area of surrounding. The expansion of this gaseous cloud would be more in the direction of primitive sun and it also came in contact of filament and started to spin with different embryos of future planet located in middle portion of filament. After the violent explosion of companion star the rotating filament covered with gaseous cloud started to expand like an elastic thread with movement of nucleus of companion star, because as the result of nuclear reaction of explosion the supernova gigantic recoiled and nucleus started to receding away from the primitive sun. The direction of expansion for rotating filament was same as the direction of receding away nucleus of supernova and expended till the collapsed limit of attraction pull of the both stars. At that stage the nucleus along with some top part of filament having thousand numbers of middle and small size shattered body broken out from the thin cylindrical filament with very high thrust and procured a very heavy momentum. After that nucleus with some taper part of filament disappeared in galaxy with a branch of small and medium size shattered body and become lost beyond the limit of attraction force of primitive sun possibly this bunch of shattered body with nucleus still

making revolution in space beyond the gravitational attraction force between the nucleus of supernova and primitive sun, the other side of expended and broken filament started to contract back with very heavy thrust in its reverse direction towards direction of primitive sun like an elastic thread. The shape of broken elastic filament path would like a under critical damped wave path having amplitude and wave length of each wave of the filament was relatively near about half of its earlier wave. The cause behind formation of under critical damped wave path is as follow. Initially the filament was rotating under process of balanced attraction force from both side and even in its expansion period it influenced under balance attraction force from both side. But when the tensions on filament exceed the elastic limit of attraction force it collapsed and filament broken in two parts with heavy thrust. One part lost beyond gravitational field of primitive sun and other part contracted back following under critical damped path under influence of one sided attraction force. Which part lost beyond the gravitational pull of primitive sun become comet, and other part contracted back following under critical damped path and broken into several piece which converted into different planets of solar system after a span of time.

Due to this phenomena of expansion and contraction the embryos of the filament procured a very high momentum which lead to provide a very high angular momentum to the different embryos when it became present shape of planet and solar system came in existence.

### 3. Formation of planets

After violently explosion of companion star millions number of small, middle and heavy sized shattered body spreaded into the space and due to in balance attraction pull from different direction their direction of movement not became very clear. Hence still they were either on their pick position or in hanging position with their respective potential energy. After taking shape of the under critical damping wave path for the filament and due to influence of one sided attraction force from primitive sun all those heavy sized shattered body procured their respective kinetic energy and started to move towards the primitive sun but in their path the embryos with broken filament were situated and rotating at different location. After formation of under critical damped wave path, the embryos of different planets started to spin in reverse direction on its axis of rotation to open its stranding with different and very high angular velocity, and hence under critical damped wave path again broken into several pieces with dust and gaseous clouds and all these pieces started to spin under influence of different embryos. Because the shape of the filament just before its broken off like a right circular cone having some central portion thick hence after again breaking in different piece the pieces of central portion were having large volume and end portions pieces were having less volume. Now these large medium volume pieces spinning at different location in space started to capture the heavy shattered body those were coming towards the primitive sun. This way a large number of heavy shattered body captured by different embryos, approximate 10 to 15 pieces of heavy shattered body were also came in influence of earth's embryos and started to spin along with



the embryos of earth and gradually coming nearer and nearer to each other around center of earth's embryos and after a span of time all these pieces of heavy shattered body fitted together to form a present shape of Earth. Same way the Mars, Venus and Mercury also came in existence. Besides the heavy size shattered body a large number of middle size shattered body also dispersed in space but they could not be able to direct proceed towards the primitive sun because there region was a central portion between the Sun and Saturn. Under influence of attraction force of Saturn and Jupiter from one side and Sun, Earth, Mars, Venus, Mercury from other side, they distributed with in the wide gaps between planets of heavy elements and planets of light element constituents in an in balance condition and started to make revolution around the primitive sun with zigzag motion.

All there middle sized shattered body distributed a large belt between Mars and Jupiter, and became asteroids.

Besides these middle size asteroids million and millions number of small and very small body had have no any particular orbit or motion hence they proceed towards the primitive sun but come in influence of different embryos region and this process continued millions of years and (still this process is taking place) these small body converted into soil, sand and other rocky portion at different planets of inner circle of solar system. Due to fitted together numbers of heavy shattered body and millions of millions number of very small shattered body the mass of the inner circle planets became increasing and ultimately speed of rotating become decreasing in direction of primitive sun.

Regarding formation of outer circle planet having constituents of lighter element it is very clear that maximum number of heavy, medium, small and very small sizes shattered body of exploded nova procured kinetic energy due to gravitational pull of primitive sun and hence their direction of movement become in direction of primitive sun in which a number of heavy mass shattered body captured by different embryos of planet of inner circle of solar system and fitted together to form planet of heavy element on middle and small size shattered body procured equilibrium condition and spreaded between the gap of mars and Jupiter. Hence a very little number of heavy and middle size shattered body from debris of Supernova were available in the region, moved away along with receding nucleus of supernova, and the gaseous could having dust particle of lighter element still spreaded around the region surrounding the supernova moving with slow motion uninfluenced by attraction force of primitive sun.

As described earlier the different embryos of filament started to spin on its axis with different speed according to its mass, size and density after separated from other, hence the different embryos of outer circle of solar system also started to spin in its opposite direction with respective piece of filament. Because the speed of spin of those embryos were very large hence the central part started to become denser and denser, but this spinning process could not be able to influence the entire section of filament. The outer portion of the filament having interstellar dust particle also somewhere banded with gaseous cloud of supernova, hence

a large section of outer interstellar dust broken out again from its central portion in different layer according to mass and density. Due to this reason central portion of this section of embryos became denser and denser and outer portion of this section broken out into ring shape at first and after word into several numbers according to mass and density.

This way the planet having constituent of denser lighter element came in existence having several number of rings around it. Jupiter, Saturn, Uranus and Neptune came in existence with the help of this phenomenon. Because these planets existence at very large distance from the primitive sun and not capable to procure radiation of sun hence it became colder and colder, finally gaseous cloud of dust particles condensed and frizzed.

Regarding the formation of Pluto it is obvious from the description earlier for formation of embryos of different planet. It formed from the embryos at very close distance from the companion star before violet explosion. Because the embryos of Pluto situated very close to the companion star, hence the heavy element's dust particle accumulated near the companion star to form embryos of Pluto. But because the filament started to expand after violent explosion of companion star hence embryos of Pluto also recede away along with the receding away nuclear of companion star and after breaking the filament it procured such distance from the primitive sun which was largest among the entire family of solar system. Because its location is very large from the primitive Sun and could not be able to procure radiation from sun hence it became very colder despite its formation of heavy constituents elements. As well as because it was not formed by the lighter element hence no any ring came in existence around Pluto despite its location in outer circle of solar system.

#### 4. Formation of Comet

Regarding the formation of comet; it has been very clearly described earlier that how a taper shaped filament having interstellar dust broken out after threshold point of elastic limit of attraction force between primitive sun and the flying nucleus of companion star which was started to move away due to gigantic recoil of Supernova beyond the gravitational pull of primitive sun. But on the basis of this hypothesis only one heavenly body like comet should be came in existence and its occurrence might be possible after a specific period of time, but if many number of similar heavenly body occurred irregularly then it may have two possibility, either the same comet came in observation in irregular periodic time or there should be other comet also exist in our galaxy. because a number of supernova would have taken place in our galaxy and after each supernova at least one comet type heavenly body should have come in existence, which adopt such a high velocity that attraction force of any star is not capable to influence the velocity of comets even at the time its transition a particular solar system there would be specific velocity of each comet like escape velocity for earth or planets, beyond which comet would not suffer any way even at time of its transition into a particular solar system.

## 5. Formation of Satellite

After violently explosion of companion star a large volume of gaseous cloud spreaded around the location of companion star and when the expansion of filament started to taking place a large volume of these gaseous cloud followed the direction of expanding filament and covered a very large distance along with the different embryos of the filament, and when the filament broken off and contracted back following under critical damped wave path and after that is started to spin in its reverse direction becoming separated from other embryos due to instant inside thrust from the direction of primitive sun. Due to this cause the gaseous cloud also spreaded out with different volume along with some middle or small size of shattered body those were also moving away in influence of expanding filament. Hence several number of large volume gaseous cloud would have covered the middle size shattered body and spreaded out of different location surrounding this region, and after the contraction back of filament these gaseous cloud covered middle size shattered body procured a kinetic energy due to attraction force of the primitive sun but the distance of those body from the primitive sun were much larger than the distance of rotating embryos of the outer circle planet. Hence the attraction between the rotating embryos with very high speed and those bodies were more than the interstellar attraction force between those bodies and the primitive sun. Hence those bodies approached towards the respective nearer rotating embryos of the planets and procured a particular orbit to make revolution around the respective nearer planets. This way those body become satellite of different planet of the outer circle of the solar system. Because the distance between Jupiter and Pluto is much larger than the distance between Jupiter and the primitive sun and the location of the supernova would have probably exited in the region also hence of the satellite type body came in existence and all planets in this region having large number of satellite. Regarding the satellite of Earth and Mars it may be pointed out the number of these satellites is only three (Two for Mars and one for Earth). The cause behind formation of these three satellite would be three big size shattered body of debris of supernova and those were coming towards the primitive sun like other several big and middle size shattered body those came in influence of rotating embryos of Mars, Earth, Venus and Mercury and fitted together with embryos to form planet. But these three heavy shattered body would not coming towards primitive sun is such a distance that it could be procured by the embryos of Mars or Earth, their distance from respective embryos were such a large that it could not be able to procured by rotating embryos of Earth and Mars but even then their distance from rotating embryos of Mars and Earth were also not such large that it would not realize the gravitational attraction of embryos of Mars and Earth respectively. Hence when those shattered body coming towards the primitive sun in a line at such distance from embryos of Mars and Earth that attraction force between respective planets and the shattered body become slightly more than the attraction force between the primitive sun and those shattered body and due to this reason those shattered body came in influence of these planets and became satellite of Mars and Earth respectively. It could be possible that a number of heavy shattered body proceed to the primitive sun

would be more but could not be able to procured by different embryos to form planet or become satellite, captured by the primitive sun. This way satellite of different planet would be came in existence and started to make revolution around the respective planet in solar system.

## 6. The condition for become satellite

When attraction force between heavy shattered body and particular embryos of future planet become slightly more than the attraction force between the heavy shattered body and the primitive sun than the heavy shattered body become the satellite of this particular planet.

When (multiplication of mass of heavy shattered body and mass of planet) / (distance between heavy shattered body and planet)<sup>2</sup> become > or = (multiplication of mass of heavy shattered body and mass of primitive sun) / (distance between heavy shattered body and the primitive sun)<sup>2</sup> takes place than the heavy shattered body of supernova debris become satellite of different planets.

## 7. Path of Planets

As it has been described earlier that binary star system was on its galactic path of revolution before capturing the interstellar dust and formation of solar system at the very initial stage. Hence in between time period of violent explosion of companion star and formation of planets and satellite, at initial stage planet started to make revolution around the sun in a particular plane due to Gravitational attraction or repulsion force as per gain angular momentum by elastic contraction and conversion of planet from embryos and formation of satellite also simultaneously. But which type of path by planet should be adopted is a matter of discussion here. As per the text book of classical mechanics and Kepler's law of planetary motion the adopted path of planet is the elliptical and when the Kepler's law of planetary motion formulated the position of the sun considered fixed, but in this case position of the primitive sun is not fixed, it has been speculated in this hypothesis that primitive sun was on its path of galactic revolution. Hence a fixed elliptical path of revolution for planet seems doubtful. Therefore it needs some discussion on formation of Kepler's law of planetary motion. From the text book of classical mechanics if we draw our attention on chapter - motion under central force – two body problem of motion under inverse square force then we find the description of orbit formulation given as follow.

The important central force is that which vary inversely as the square of the distance

$F(r) = -k/r^2$  where  $k$  is the constant. The corresponding potential energy will be

$$V(r) = -k/r$$

Equation of the orbit is...

$$d^2u/d\theta^2 + u = -mf(1/u)/l^2u^2$$

Putting  $f(r) = f(1/u)$

$$= (-k/r^2)$$

$$= (-ku^2)$$

We get

$$d^2u/d\theta^2 + u = mk/l^2 \dots \dots \dots (1)$$

Let us put  $y = u - mk/l^2$  so that  $d^2y/d\theta^2 = d^2u/d\theta^2$

Equation then becomes

$$d^2y / d\theta^2 + y = 0$$

The general solution of this equation is

$$y = u^1 \cos(\theta - \theta^1)$$

$$u = mk / l^2 + u^1 \cos(\theta - \theta^1)$$

$$u = l / r = mk / l^2 + u^1 \cos(\theta - \theta^1) \dots \dots \dots (2)$$

Equation (2) represent a number of curve equation,  $\theta^1$  &  $u^1$  are constant for simplicity if we orient our co-ordinate system so that

$$\theta^1 = 0 \text{ then } l / r = mk / l^2 + u^1 (\cos \theta)$$

$$r = l^2 / mk / 1 + u^1 l^2 / mk \cos \theta \dots \dots \dots (3)$$

$\theta^1$  which we have made zero can be recognize as one of the angle at which the orbit turn because  $\theta = \theta^1$  or  $\theta = \theta^1 + \pi$  result in a maximum and minimum value for r. thus  $\theta^1$  can be called turning point.

We shall show that equation (3) coinciding with keplar's law of planetary motion which state that orbit are conic-section (ellipse for the planet with center of force at the one of the foci)

The first keplar s law of planetary motion is formulated on the basis of above basic description along with same other detail..

But if we consider  $\theta$  and  $\theta^1$  of equation (2) in some different way then the elliptical type orbit may be also be obtain ,but the plane of orbit from a reference will not be fixed and by the several numbers of same way revolution of planets orbit will be represent a equaradial spiral path. If we do not consider  $\theta^1 = \theta$  then

$$l / r = mk / l^2 + u^1 \cos(\theta + \theta^1)$$

$$r = l^2 / mk / 1 + u^1 l^2 \cos(\theta + \theta^1) / mk \dots \dots \dots (4)$$

If we consider  $\theta$  and  $\theta^1$  of equation (4) in such way that both represent variation in angles in different direction then this equation will represent a different type of path of planet beside existing ellipse.

If  $\theta$  represents angular variation of revolution by planet and  $\theta^1$  represents angular variation by sun on its galactic path of revolution, then in this case  $\theta^1$  will not be zero but for each cycle of  $\theta$  there will be a minute variation in  $\theta^1$  and because planets make revolution around the sun keeping distance (radius vector) always equal.

Hence for every minute variation in  $\theta^1$ ,  $\theta$  will be complete one revolution and elliptical type of orbit will be obtain but this orbit will not be exactly ellipse. The actual shape of this orbit will be like a part of spiral having equal radius, with the variation of  $\theta^1$  up to  $360^\circ$ , the  $\theta$  will be complete several number of cycles and complete orbit for one cycle of  $\theta^1$  should be spiral having equal radius (distance of planet from the sun). Hence on the basis of this explanation we may conclude that orbit of planet for one revolution seems ellipse but not exactly ellipse the causes behind these are as follows. When the keplar's law of planetary motion formulated the sun was being consider fixed but now we are familiar that location of sun is not fixed hence this type of variation is possible.

Beside the same we are also familiar that anybody making revolution around a central body following spiral type of

path than it should be follow a small oscillation also. Hence on the basis of this hypothesis four type of motion are adopted by planets.

- 1) Rotation on its axis.
- 2) Oscillation on its axis of rotation.
- 3) Revolution around the sun (elliptical Path).
- 4) Revolution around the sun spherically by spiral path.

As we are familiar that number of astronomical observation are still undefined like sidereal year, astronomical precession, Astronomical newtation, Venus transition, as well as a very important observation of geomagnetic elements (960 years apex). Hence all these astronomical and physical observations may be define and explained on the basis of spiral type path of revolution having small osculation of planets, hence possibilities for existence of these type of introduced path cannot be overlook. This way this hypothesis is fully capable to give explanation for all most all peculiar characteristics features of our solar system.

**These are as follows:-**

- 1) Problem of great distance between planets and the sun.
- 2) Problem of large amount angular momentum of the planets.
- 3) Peculiar arrangement of the planets on the basic of its size.
- 4) Similar direction of rotation as well as plan of revolution.
- 5) The problem of lighter constituent's elements of the planets of the outer circle of our solar system.
- 6) The problem of heavy element of material of the planet than the sun.
- 7) Existence of Pluto on the outer circle despite having heavy element.
- 8) Formation of planetary system (Satellites).
- 9) Problem of occurrence of comet.
- 10) Problem of astronomical puzzle like side real day, side red year, astronomical precession, Astronomical Newtation.
- 11) As well as also capable to explain possible cause behind occurrence of Venus transition.

## 8. Explanation of Problems

### (1) The great distance between planet and the sun

As described earlier, when nucleus of companion star came under process of throw by the recoil of gigantic stellar explosion out of gravitational field of the primitive sun, the rotating filament started to expend like an elastic thread and finally contracted back making an under critical damping path. In this process of expansion, distance of embryos of future planet started to increase, because the rotating filament contained embryos. However the filament also contracted back in the form of under critical damped wave path shape but even then the distance of planet was great because embryos rearranged in this path in such way that amplitude and wavelength of the any embryos was near about twice of the previous wave this way distance of planet became greater with increasing sequence of embryos of future planet far from primitive sun.



**(2) The problems of heavier elements of the material of the planet than the sun**

Because both star of binary system were under process of nuclear fusion which required lighter element like hydrogen atoms, whereas interstellar dust was a cloud of lighter and heavy elements particles, which at first stage converted into embryos and finally planets.

The embryos were formed by process of aggregation and accretion around the bigger particles which started due to collision among the dust particles, and finally planet were formed by capturing, some heavy shattered body of supernova debris. Hence the planets became having heavier elements than the sun.

**(3) Large amount of angular momentum**

Because filament having embryos of future planet underwent a process of expansion up to breaking point of the attraction force between nucleus of the companion star and primitive sun. Hence after breaking the attraction from one side, filament having embryos came suddenly in one side attraction force, which leads a large amount of angular momentum for the embryos of future planets which converted finally into present shape of planet by capturing some heavy shattered body of supernova debris.

**(4) Similar direction of rotation**

As the embryos of future planet formed with same rotating filament which converted into planet separating from each other and started to open its stranding by speedily rotation in reverse direction, hence they procure same direction of rotation.

**(5) Similar plan of revolution**

As all the planets are a part of same rotating filament which converted into a under critical damping wave path at one instant after breaking from nucleus of companion star attraction force, hence all started to make revolution in same plane.

**(6) The problem of lighter constituent element for planets of the outer circle of the solar system**

As it described that due to influence of attraction force from both side's sun, heavy constituent of interstellar dust particle started to come closer to its respective sun to form embryos of future planet according to its mass, density and dimension. Hence embryos of central portion formed by the lighter constituents of interstellar dust particle, as well as after formation of under critical damped wave path of filament dust and gaseous particles surrounding supernova situated at very large distance from the primitive sun and not in a position to captured by the sun easily. Hence these dust and gaseous cloud being captured by different embryos of future planets of the outer circle and after condensation and freezing out process some part of these cloud fitted together with respective planets. Due to this reason planets of outer circle of the solar system are of the lighter constituent of elements except Pluto.

**(7) As exceptional occurrence of heavy element planet (Pluto) in outer circle of solar system**

As described earlier planets of heavy elements came in existence due to attraction force of the respective sun. Hence

embryos of Earth, Mars, Venus, and Mercury came in existence in direction of primitive sun from the filament of interstellar dust and similar way Pluto also come in existence in opposite direction of the filament which was in side of companion star.

**(8) Origin of comets**

As described earlier nucleus of companion star, came under process of threw out by the recoil of gigantic staller, the filament also follow the same direction and at that time some medium and small size shattered body of supernova debris also bonded with nucleus. And the time of breaking from gravitational pull of the primitive sun their bond could not be able to break, and nucleus along with middle and small size shattered body disappeared beyond the gravitational field of the primitive sun. Because there are no any other star situated near about, hence its escape velocity do not suffer any way and after covering a particular distance with projectile like path this bunch of shattered body occurred in the region of gravitational attraction of sun and started to make revolution periodically. (75 years )

**(9) Peculiar arrangement of planets according to its size**

As the interstellar just partite started to winding up around the imaginary line of contact between the gravitational and magnetic pull of both stars. Hence a large portion of interstellar dust particles approached to come closer and closer to the center of mass therefore the filament formed due to winding of interstellar dust in shape of spinning cylinder having thick middle and tapping end, and embryos of the future planet came existence inside which. Therefore the embryos of future planet came existence inside which .therefore the embryos of future planet formed in central portion become largest and decreasing simultaneously in both direction from the center of both star the center portion of the spinning cylinder would be possible location of Jupiter, hence from Jupiter, Mars, Earth, Venus and Mercury came in existence with decreasing size sequences in direction of primitive Sun .similar from Jupiter ,Saturn ,Uranus, Neptune and Pluto came in existence in same way decreasing size sequence in direction of companion star. Hence solar system represents a very peculiar arrangement of planets size wise.

**(10) Formation of planetary system**

Planetary system means planets with its satellite .how everall the planets those are existed near both direction of respective sun have no planetary system or no satellite or very less number of satellite like earth Mars, and Pluto having one, two and one satellite respectively. But planets those are situated in central portion of solar system have large number of satellite like Jupiter, Saturn, Uranus, and Neptune. Because the event of supernova would have taken place near the location of Saturn hence maximum gaseous cloud of supernova would have spreaded around this area .and some part of this cloud followed the direction of nucleus after supernova and these cloud further dispersed in these region and became satellite in influence of different rotating embryo hence control portion of planets represent a large family of satellite.

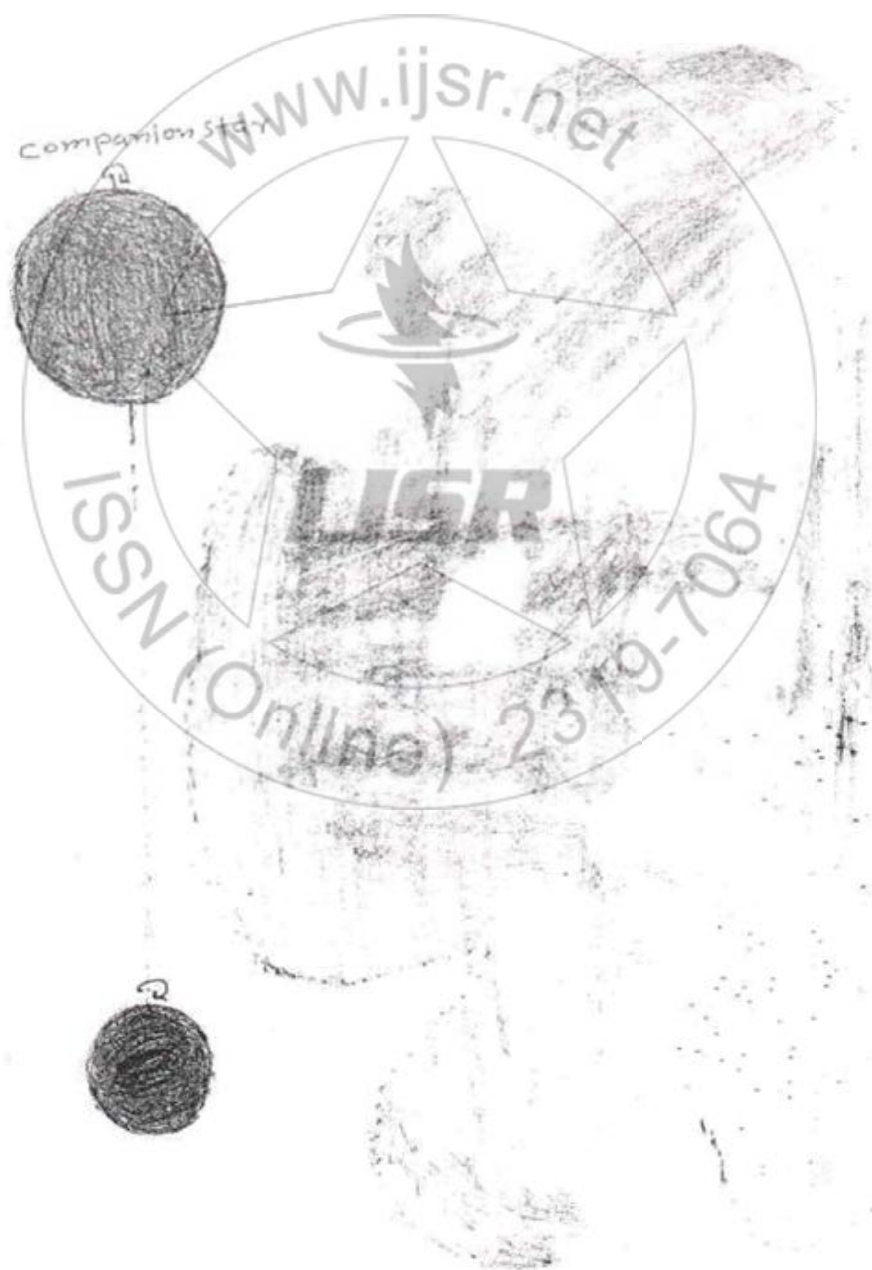
## 9. Conclusion

With the help of interstellar Elastic hypothesis all most all characteristic feature solar system can be explain besides the known characteristic feature some another features of solar system are also introduce in this research paper regarding path of revolution for the planets .the path of revolution for planet is speculated and derived equaradial spiral path which is a subject of proper verification .as we are familiar mathematically that anybody following equaradial spiral path should have also follow a small oscillation. Whereas we are familiar only with two types of motion four types of motion, rotation, revolution, oscillation and spiral. Because a number of astronomical observation like sidereal day, side real year, astronomical precession, astromicalnewtation, Venus transition and secular variation of geomagnetic elements are still not defined and categorized as astronomical puzzles. Hence after finding the exact periodic

time small oscilation, exact periodic time of revolution and exact periodic time of equaradial spiral we can easily define the above men tined un defined observation. However an effort in this direction has been taken by author of this research paper.

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**Figure 1: Binary star with nebula**

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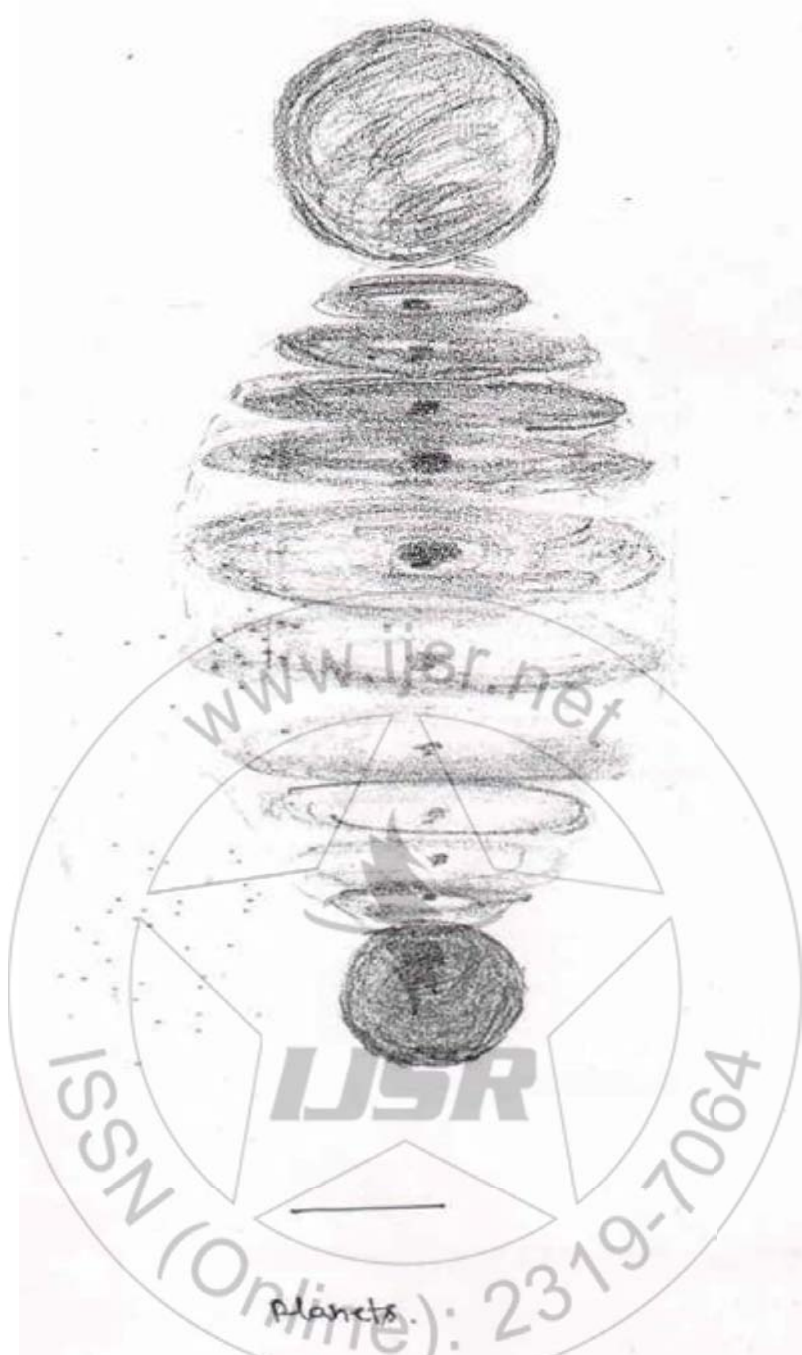




Figure 2: binary star system with winding up nebula

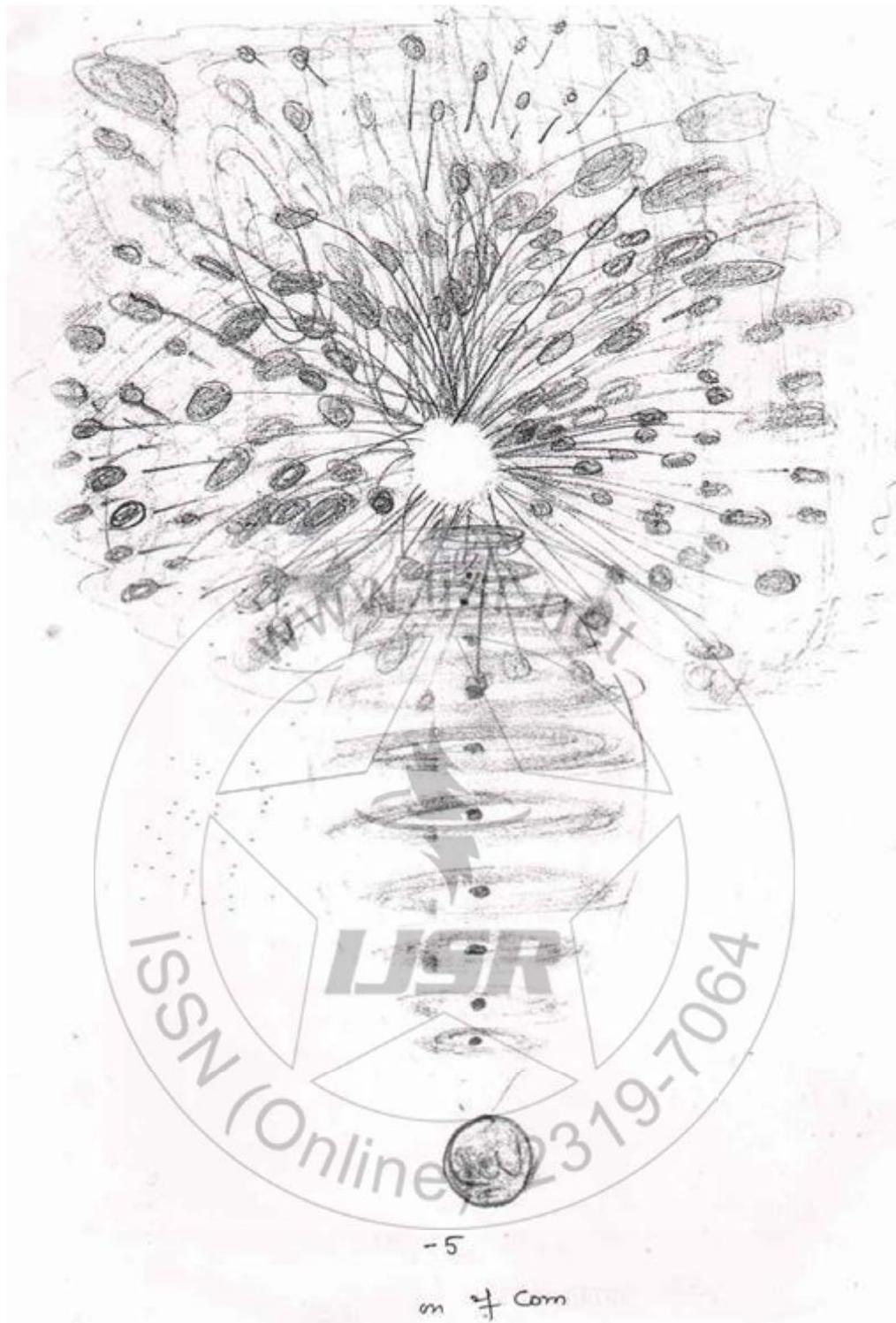


Figure 3: Binary star system with rotating cylindrical tube



**Figure 4:** formation of embryos for future planets





**Figure 5:** explosion of companion star



**Figure 6:** expansion of filament along with nucleus of companion star.





**Figure 7:** contraction back of filaments after breaking.....



