Why there is Symmetry between Shape and Orbit of Astronomical Bodies: a Little Deviation from Spherical Shape Allows Time to Flow in Forward Direction; Why Particles and Anti-particles Originate and Then, Recombine.

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Abstract. Sphere is an ideal shape in geometry. Whenever there is an enough mass clumps together to form an astronomical body, it tends to follow spherical shape. Irrespective of its material composition of any astronomical body, a diameter of few hundred kilometres is sufficient enough to create spherical form. But there is always little deviation from the spherical form of astronomical bodies to be elliptical to be precise. So, almost all big enough astronomical bodies have elliptical form of shape. There is definitely symmetry between the elliptical shape of an astronomical body and elliptical orbit where other astronomical bodies revolving around. In this paper, I will focus on the symmetry between shape and orbit of astronomical bodies. I will also focus how a little deviation from the spherical shape allows the physical time to flow in forward direction. At the end, I will discuss why particles and anti-particles originate and recombine together.

1. The Theories

1.1 First Theory
The Universe obeys the property of symmetry to be symmetrical Universe. According to the property of symmetry, the Universe is perfectly even in all direction on a large scale.

1.2 Second Theory
The Universe obeys the property to be in ideal shape. A big enough mass always clumps together to be close to sphere (idealistic shape property).

1.3 Third Theory
The physical time does exist because of the little deviation of shape of astronomical bodies from ideal sphere to be elliptical which allows the physical time to flow in forward direction (the direction of the physical time as it is at the present state of the Universe).

1.4 Fourth Theory
A deviation from the spherical shape to be elliptical shape is the necessary and sufficient condition for the physical time to exist for evolution of the Universe.

1.5 Fifth Theory
A perfect spherical shape would give zero rate of change of temporal dimension: the evolution of the Universe would be dead zero.

1.6 Sixth Theory
A non-uniform curvature of space-time (elliptical) allows the physical time to flow in the forward direction (as it is in the present state of the Universe). A uniform curvature of space-time would yield zero temporal movement, then, the Universe would be free from any evolution.

2. Introduction
The physical time runs in the forward direction because of the relativistic speed in an elliptical orbit. The space is filled with very tiny little Higgs fields [1, 2]. Each point of space (a unit area) possesses a Higgs field in it. Two adjacent points have two Higgs fields having opposite rotation at their own axis between them which makes them unique and independent of each other and hence, very stable. Thus, each point of space is highly stable because, normally, adjacent Higgs fields never overlap on each other (because of opposite rotation of adjacent Higgs field, they actually repel one another). The Higgs fields have to be of oval or elliptical shape because in spherical shape the rate of change of temporal flow is zero and we know, free space has its own time flow in forward direction. The Higgs field revolving around its own axis at the speed of light but with little variation in speed because of the oval shape to make the rate of change of temporal flow to be non-zero which is necessary and sufficient condition for the physical time to flow in the forward direction. A good example that resembles the rotation of Higgs field at its own axis is the revolution of Earth around Sun [3, 4]. The revolution of Earth around sun has rate of change of speed is non-zero [5, 6].

![Figure 1. Revolution of Earth around Sun](image)

In the figure, Earth’s position on 21 March and on 23 September, Earth has the highest velocity and on 3 July followed by 3 January, earth has the lowest velocity [7, 8]. Thus, earth has variable velocity from highest to lowest with each point has unique velocity [9]. So, the rate at which the velocity of
Earth changes is non-zero [1, 9]. Similarly, the Higgs field is also of elliptical shape with non-zero rate of change of velocity for the physical time to exist in forward direction.

Let, the speed of earth in revolution around sun is \( V \)

Now, \( V \) is a function of space and time

Let, space is \( S \) and time is \( T \)

\[
V = F(S, T) \tag{1}
\]

\[
V = \frac{dS}{dT} \tag{2}
\]

Because \( V = \frac{dS}{dT} \) is non-zero, the earth has a variable speed all the time while revolving around the sun. If \( dS \) is constant, \( V \) is a function of \( T \) only.

\[
V = F(T) \tag{3}
\]

Thus, \( V \) is non-zero but finite if \( dT \) is non-zero. The earth’s space movement \( (dS) \) is linear, constant but it is the variation of temporal movement \( (dT) \) which makes the earth revolution a variable speed. This effect can be termed as gravitational field as elliptical. Because Sun has an elliptical shape makes the gravitational field of sun as elliptical, thus, the orbit of earth is elliptical. Because the small tiny Higgs fields are elliptical and adjacent Higgs fields are of opposite rotation (which makes each Higgs field unique, highly stable); under the influence of any astronomical body, the small Higgs fields changes their orientation to be unidirectional to form gravitational field for the astronomical body. Thus, a lot of small tiny Higgs fields unites together to form a gravitational force under the influence of an astronomical body. Thus, gravity is that also follow the shape of Higgs field to be elliptical and the elliptical gravity forces the astronomical body to be of elliptical shape. This is the reason why astronomical body with enough mass generally is of elliptical shape irrespective of material composition in it. The form of a body is determined by the interaction between gravity and solidity. Small asteroids and comets have little gravity which is unable to deform solidity. Small gravity is insufficient to deform larger rocks into elliptical distribution. There is some unevenness in the surface of the astronomical body like mountains, valleys on earth, but this unevenness gets reduced with higher gravitational field. Thus, Higgs Boson transforms into graviton under the influence of astronomical bodies like earth, sun etc. The necessary and sufficient condition for the physical time to exist is \( dT \) has to be non-zero, for that elliptical shape is necessary and not spherical shape. Because spherical shape will make rate of change of temporal flow zero.

The following picture shows elliptical shaped Higgs field.

![Elliptical Shaped Higgs Field](image-url)
The highest velocity of the Higgs field is at points A and C whereas the lowest velocity is at points B and D which resembles the revolution of earth around sun.

3. Why particle and anti – particle originate and recombine

As shown in the figure 2, the highest velocity of Higgs field is at points A and C; this velocity is greater than the speed of light to produce anti-particle. The velocity of Higgs field at points B and D is lower than the velocity of light when it produces particle. From point A to point B or from point B to C or from point C to D or from point D to A, somewhere there lie four points where the velocity of Higgs field is the velocity of light when particle and anti-particle recombine themselves to be back in energy. Because of little variation of the velocity of Higgs field, particle and anti-particle originate and recombine together.

4. Conclusion

The Universe obeys the property of symmetry to be a symmetrical Universe. According to the property of symmetry, the Universe is perfectly even in all direction on a large scale. The Universe also obeys the property to be in ideal shape. A big enough mass always clumps together to be close to sphere (idealistic shape property). The physical time does exist because of the little deviation of shape of astronomical bodies from ideal sphere to be elliptical which allows the physical time to flow in forward direction (the direction of the physical time as it is at the present state of the Universe). A deviation from the spherical shape to be elliptical shape is the necessary and sufficient condition for the physical time to exist for evolution of the Universe, The rate at which the temporal movement changes, \( dT \), has to be non-zero. A perfect spherical shape would give zero rate of change of temporal dimension (\( dT = 0 \)); the evolution of the Universe would be dead zero. A non-uniform curvature of space-time (elliptical) allows the physical time to flow in the forward direction (as it is in the present state of the Universe). A uniform curvature of space-time would yield zero temporal movement, then, the Universe would be free from any evolution.

References

[1] Stephen Hawking, *A Briefer History of Time* (Bantam Books, London), pp. 1 – 47.
[2] Roger Penrose, *Cycles of Time*, (Vintage Books, London), pp. 41 – 55.
[3] Stephen Hawking, *The Grand Design*, (Bantam Books, London), pp. 10 – 44.
[4] Stephen Hawking, *Black holes and Baby Universes and other essays*, (Bantam Press, London 2013), pp 12 – 27
[5] Stephen Hawking, *The Universe in a Nutshell*, (Bantam Press, London 2013), pp. 48 – 94, 99, 196.
[6] Stephen Hawking, *A Brief History of Time*, (Bantam Books, London), pp. 56-157.
[7] Stephen Hawking, *Stephen Hawking’s Universe: Strange Stuff Explained*.
[8] Stephen Hawking, *A stubbornly persistent illusion-The essential scientific works of Albert Einstein*, (Running Press Book Publishers, Philadelphia, London 2011), pp. 12 – 34.
[9] Stephen Hawking, *The Beginning of Time*, (A Lecture).

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