

Length Contraction and Time Dilation are Experimental but Non-Physical Variations in Space-Time.

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Abstract: Space-time is a single entity was discovered by former scientist Sir Albert Einstein. In his experimentation with speed of light, he observed two variations, one with distance and other one with time such that, variation in one factor resulted in variation of the other called length contraction and time dilation respectively. The above said factors are mistaken or misinterpreted as shortening of travelling distance in terms of length contraction and possibility of time travel with time dilation. In this journal we shall see the drawings with real dimensions of space-time to show how length contraction and time dilation are just experimental factors without causing any physical changes to the object.

Key points

- According to Sir Einstein’s interpretation, speed of light results in shortened distance called contraction in length and a time delay called dilation in time.
- These two variations are pertaining to the aspects of space and time but it is interpreted physically in objected oriented perspective, in terms of distance and clock time.
- His first observation obviously with the variation in time (clock time) whose value of dilation, made him presume consequential changes in distance itself (henceforth, to be interpreted for space instead of distance).

Keywords: Length contraction, time dilation, real dimensions, deep radius rd, sp-ti 0.

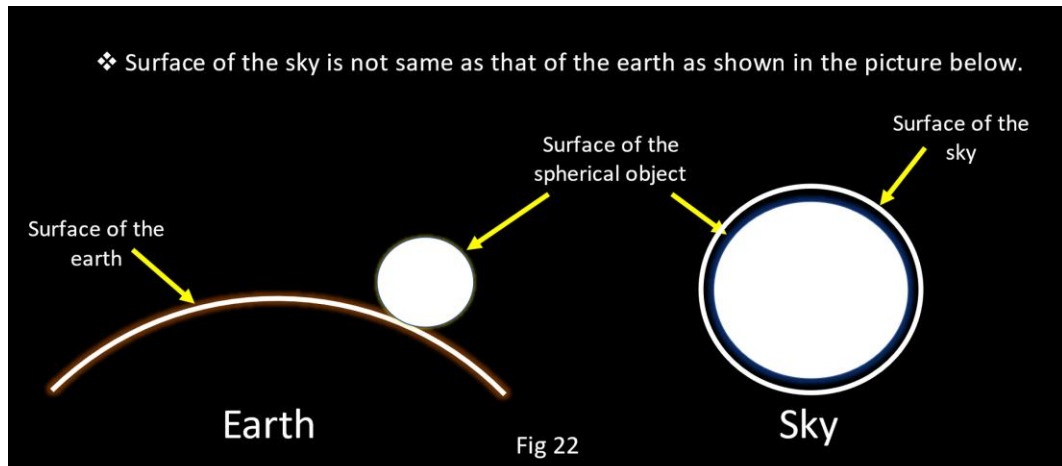
1. INTRODUCTION

- In our previous paper we have studied that, length contraction and time dilation actually indicate to have dimensions behind them in space-time. Thus, two of the real dimensions are formulated with the table. In this journal, we shall utilize these two real dimensions to highlight or observe the variations in length contraction and time dilation with continuation diagrams (Previous Fig No.21).
- Also, we shall find the connection between an object and its living space-time. The wide dimension (curvilinear) serves the surface of the projected object in space-time, while deep dimension with deep radius (rd) connects the surface of the object from wide dimension to its point of depth called sp-ti 0, radially.

1.1. Table of Real Dimensions

Table of new discovered dimensions in space science			
S. No.	Real Dimensions of space-time (In terms of Aspects)	Path / Nature	Object oriented dimensions in space-time (In terms of Measurements)
1	Wide	Curvilinear	Length L (Wide)
			Width W (Wide)
			Height H (Wide)
			Radius R (Wide)
2	Deep	Radial	Deep Radius rd (Deep)

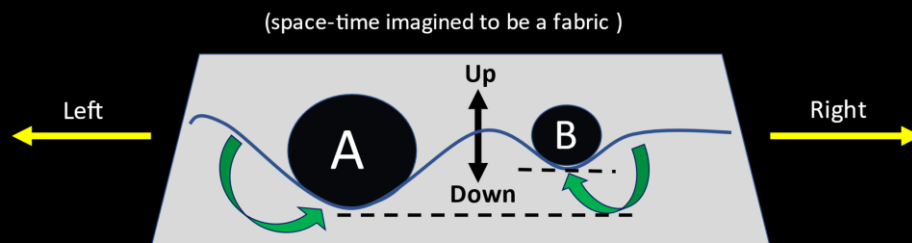
1.2. Space-time fabric – interpreted as closely weaved elastic threads or strings



▪ This above picture is useful for understanding the relationship between objects and space-time with clarity. Note that surface of the sky is surrounding the object and hence, it must also be spherical, same as the object. Sphere is an ideal shape to consider.

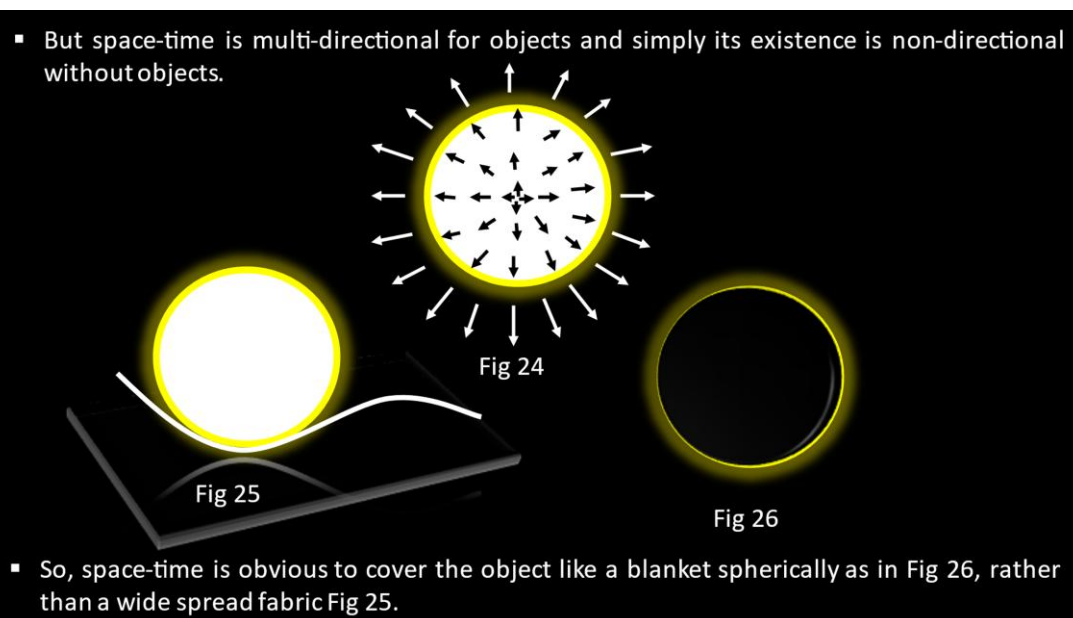
- There are three major scientific case studies for an object existing in space-time.
 - i) Volume of an object
 - ii) Mass of an object
 - iii) Speed of an object

□ Though there is no volume without mass, still the object experiences two ways of connection with space-time, as its two different characteristics.



□ Let us consider the space-time like a fabric as imagined by Sir Albert Einstein. Here the spread sheet is along left-right direction whereas the objects pressing the fabric in vertical (Up-Down) directions.

(Single line drawings shall be considered to have drawn in space-time itself)



- We know, a blanket is closely weaved with threads. So, we shall consider the Sp-ti lines like threads or strings covering the object.

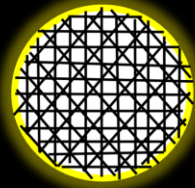


Fig 27

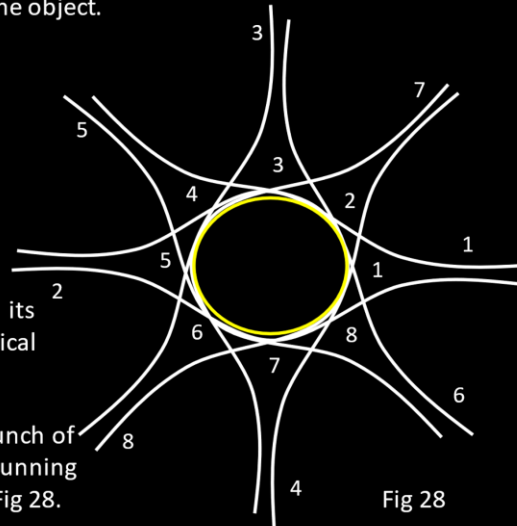


Fig 28

- Thread is considered to be a string for its elastic nature. Fig 27 appears like a spherical object covered with string bundle.
- For our simple understanding we open bunch of strings in 8 directions like ropes in pairs running on either side of the object to each other, Fig 28.

(Single line drawings shall be considered to have drawn in space-time itself)

- In this type of illustration the object is trapped within the strings in all the directions.

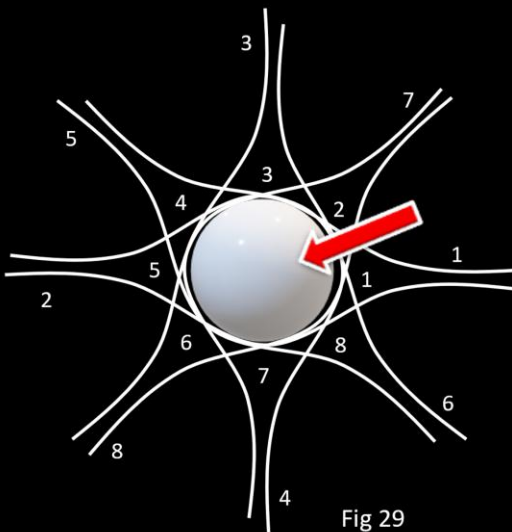
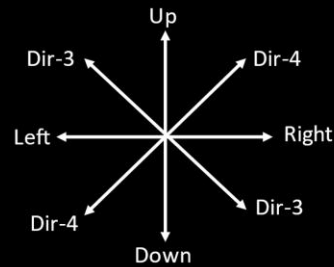


Fig 29

- Also, there is no connection between object and the space-time as if the object is different from its source of living.
- So, we think from the point of sp-ti 0 which is at the core of the object, to emerge out in 8 directions as single strings for our understanding



- When we start thinking from space-time 0, the directions are solved such that sp-ti lines are in and out of the object and filled everywhere and the object is said to be a part of the existence. So, in Fig 30 the numbers are further reduced in singularity

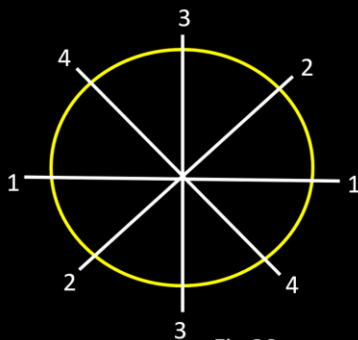


Fig 30

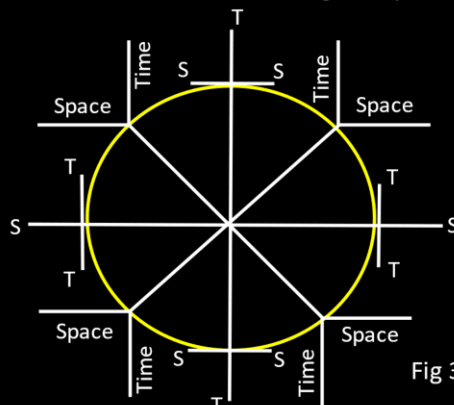


Fig 31

- Even though the lines are solved towards singularity, each lines has dual nature of sky called space and time, to be noted. This duality can be represented and shown as in Fig 31.

2. IMPACT OF CHARACTERISTICS OF AN OBJECT IN SPACE-TIME CONFIGURATION

2.1. Volume of an Object in Space-Time

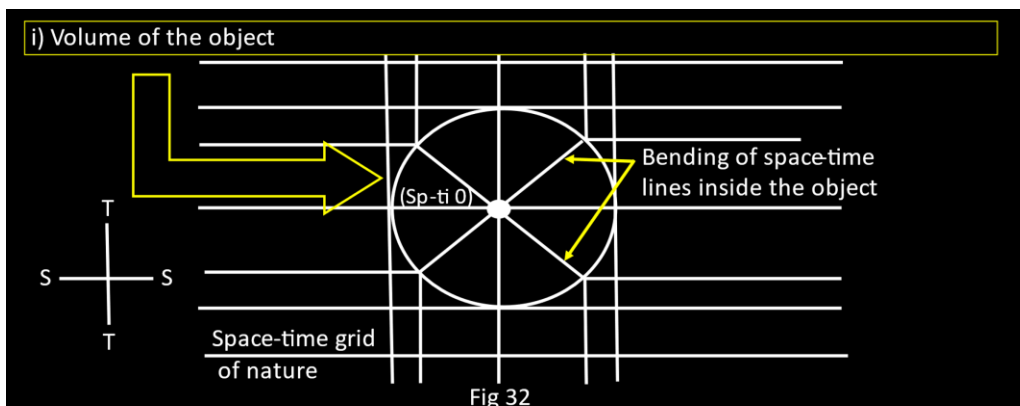


Fig 32

- Now, considering second dimension here, the lines entering into the object meet at its point of depth called sp-ti 0. The sp-ti lines that are unbent by the object remains as space-time grid of nature.
- This diagram is a representation of object occupying space-time. We shall see an object along with its mobility in space-time.

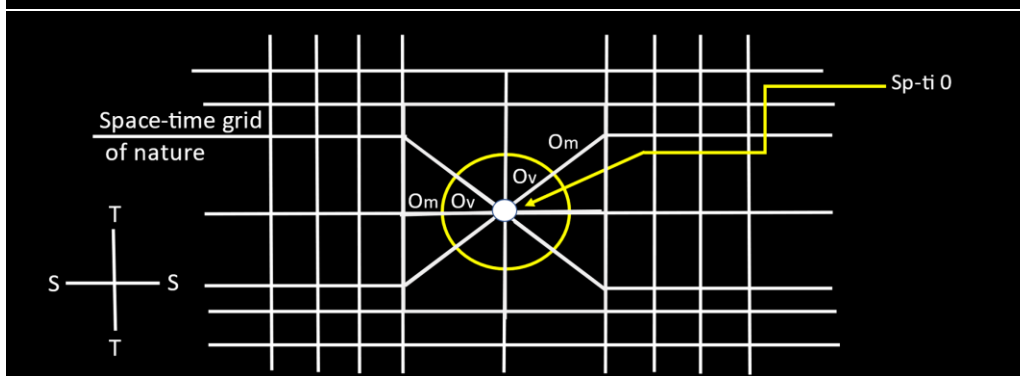


Fig 33

- In this diagram, we see the sp-ti lines does not bend at the surface of the object, but turns well before, leaving some space and time for the mobility of the object. So, inside and outside of the object this utilization of the line could be denoted as O_v and O_m .

✓ Total elasticity = (Elasticity required for) Volume of the object + Mobility of the object

O_v O_m

(Single line drawings shall be considered to have drawn in space-time itself)

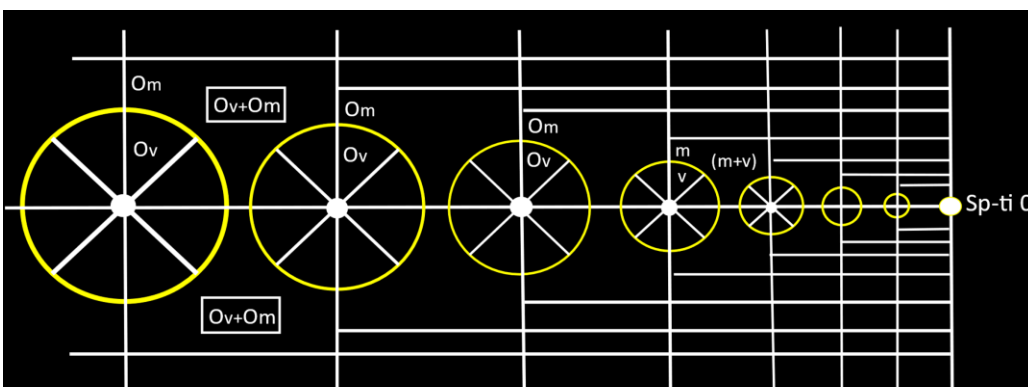


Fig 34

- Fig 34 shows, according to the size of the objects, bending of sp-ti lines varies proportional to the volume of the objects towards sp-ti 0. Naturally it depends upon the capacity of the object to bend the sp-ti lines with its volume.
- In other words, sp-ti lines in turn are like a medium that surrounds the objects with some tolerance for the volume as well as mobility of the objects.

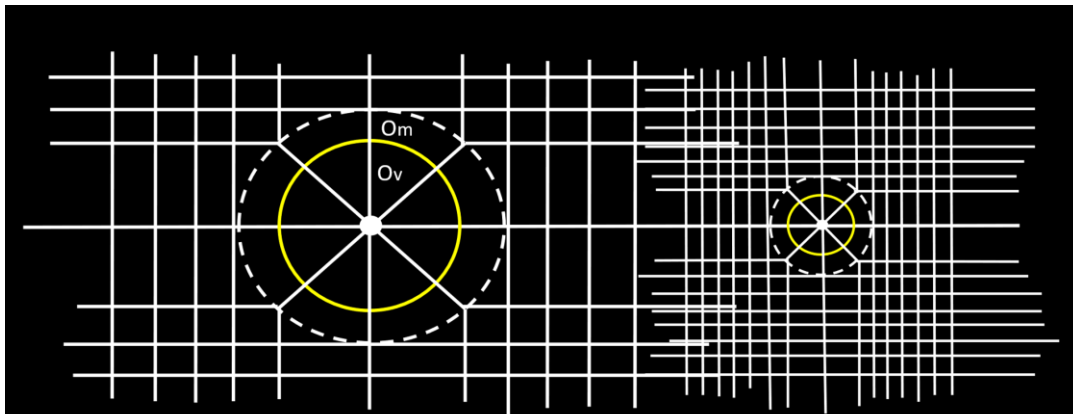


Fig 35

- The above diagram shows objects of two different volumes surrounded by space-time grid. Thin lines around the small object indicates deepness of space-time from the large object surrounded by its sp-ti grid.

2.2. Mass of an Object in Space-Time

ii) Mass of the object in space-time

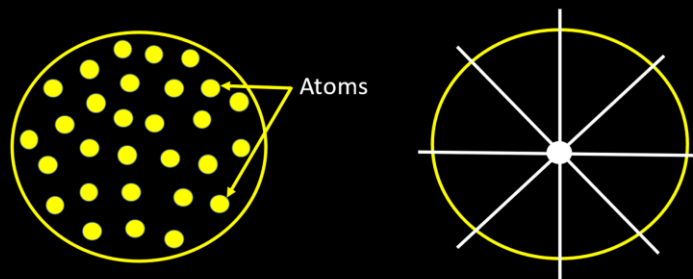


Fig 36

- Now let us see how mass of the object is connected to space-time. Mass of an object actually means the masses of fundamental units called atoms that are constituting an object.
- The pattern of bending of sp-ti lines remains the same for all the objects, but still there is a difference between mass and volume with the objects itself, for bending the same.

❖ Consider an average mass density of an object as shown in Fig 37,

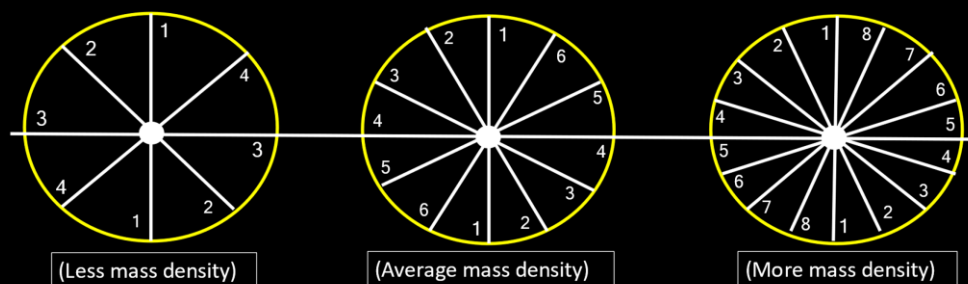
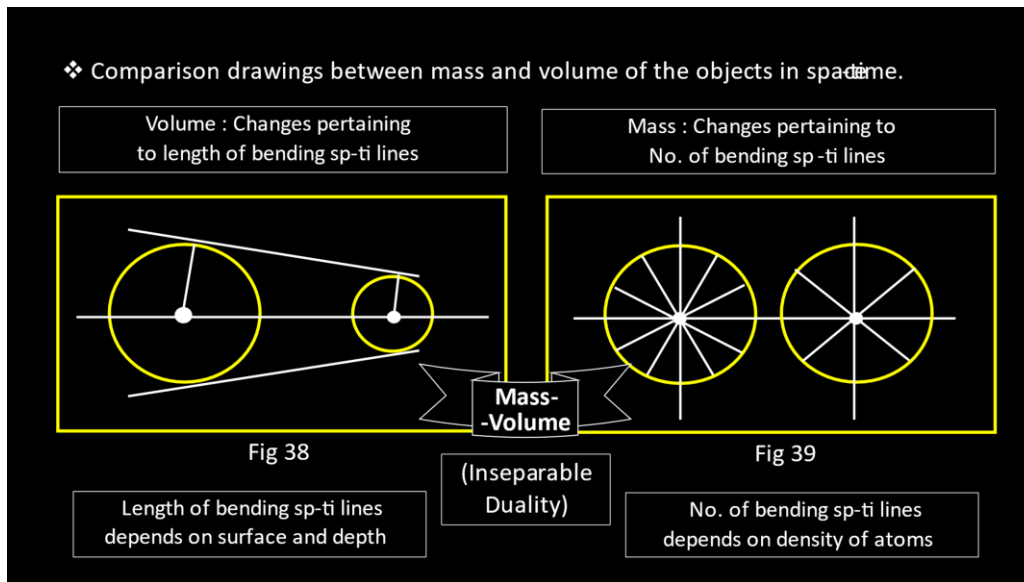


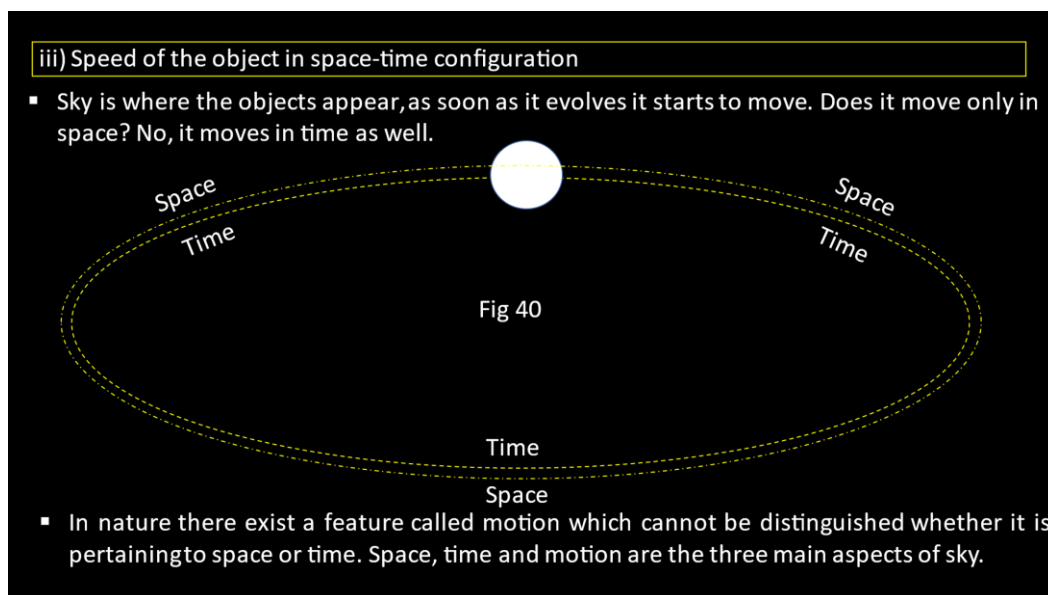
Fig 37

- For a less mass density, the number of bending sp-ti lines in the object is reduced whereas for more mass density it is vice versa.
- But in case of volume, it is about length of the sp-ti lines and not count of the lines. However the shape or volume of the object is due its mass and so volume-mass is an inseparable duality.

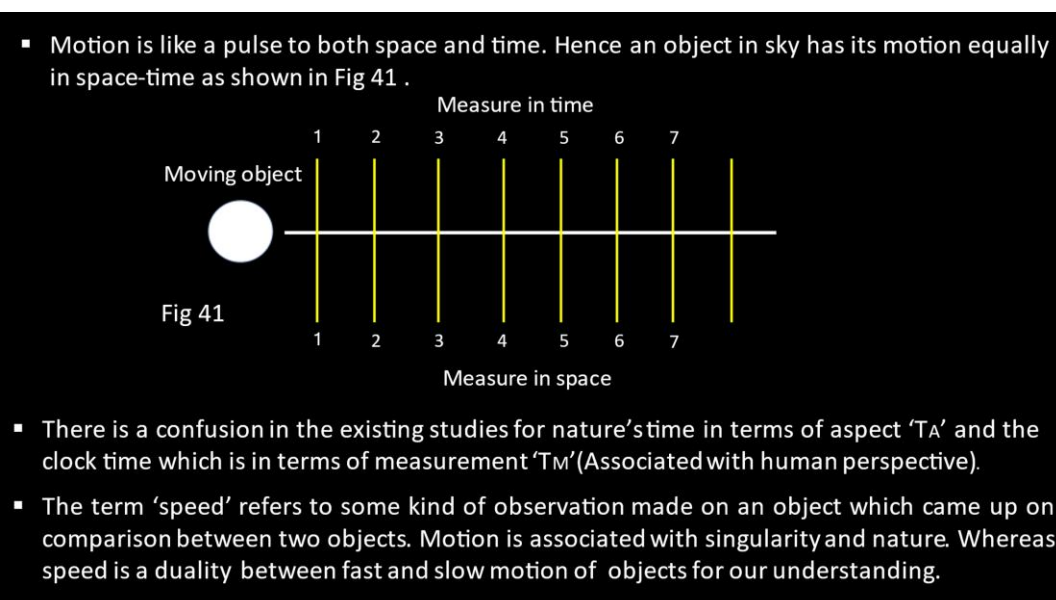
(Single line drawings shall be considered to have drawn in space-time itself)



2.3. Speed of an Object in Space-Time



(Single line drawings shall be considered to have drawn in space-time itself)



- Now, consider an object moving in a direction as shown in Fig 42. Let us see how speed factor causes variation to the object in space-time.

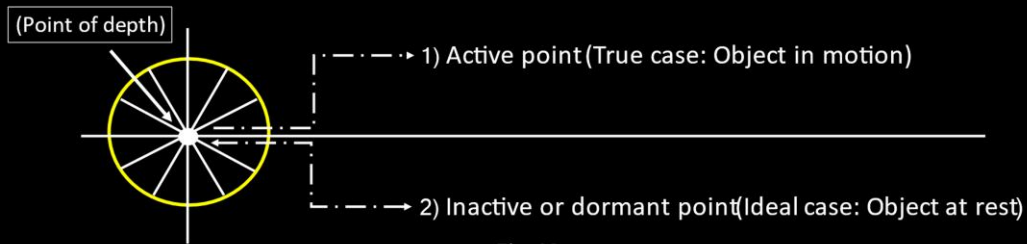


Fig 42

- The sp-ti 0, point of depth has two states of existence, one is being inactive or dormant point at the depth, when the object is at rest, which is an ideal case.
- The other is, being an active point due to motion of the object, which is the true or real case of its existence. However this point is no more inside the object and lies ahead of the object in its direction of motion, Fig 43.

(Single line drawings shall be considered to have drawn in space-time itself)

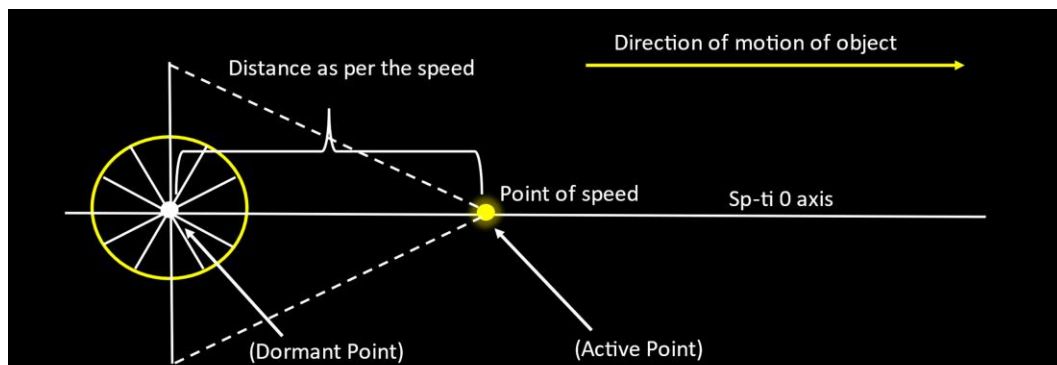


Fig 43

- Fig 43 shows the active and dormant points of an object in space-time. Also this distance between the point of depth and the active point is maintained by the object with its increase or decrease of speed.
- This active point could be distinguished as point of speed which is different from point of depth. Fig 44 shows the variation of this speed point with the varying speed.

- To understand this changes clearly, we shall consider some more points, front and back of an average speed point along the sp-ti 0 axis.

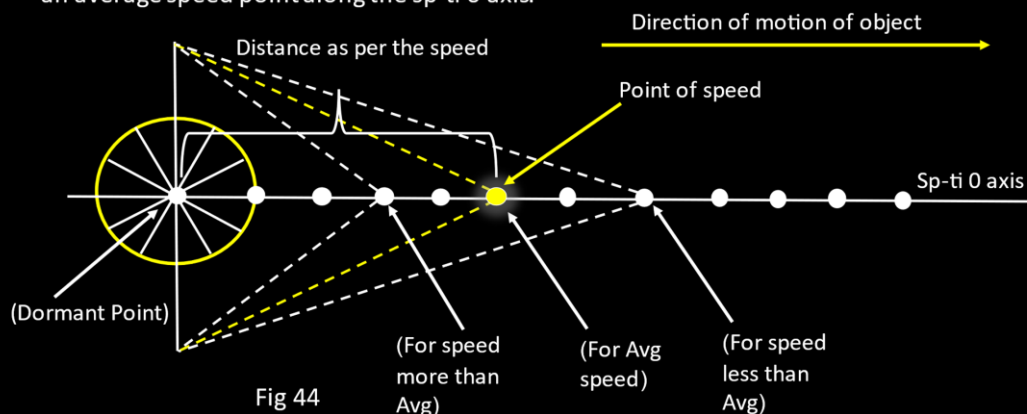
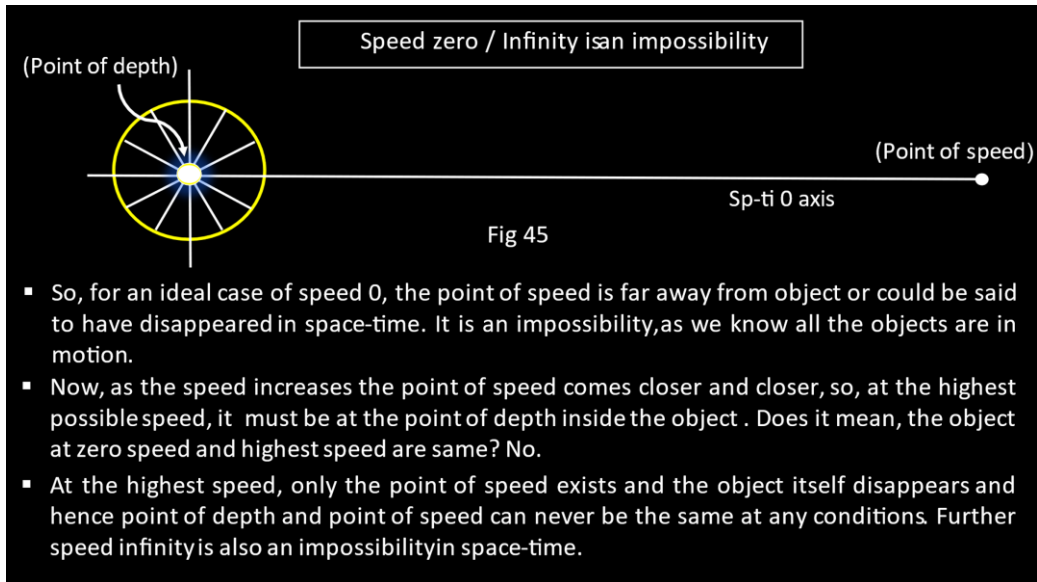


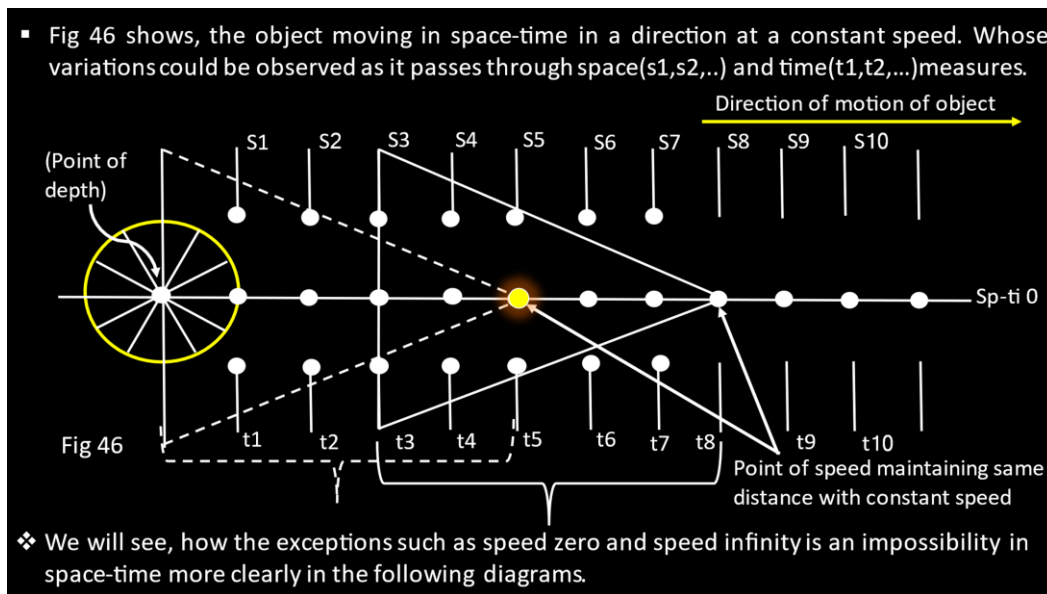
Fig 44

- Fig 44, we see the speed point shifting towards the object (point of depth) for increasing speed whereas it moves away from the object for decreasing speed.

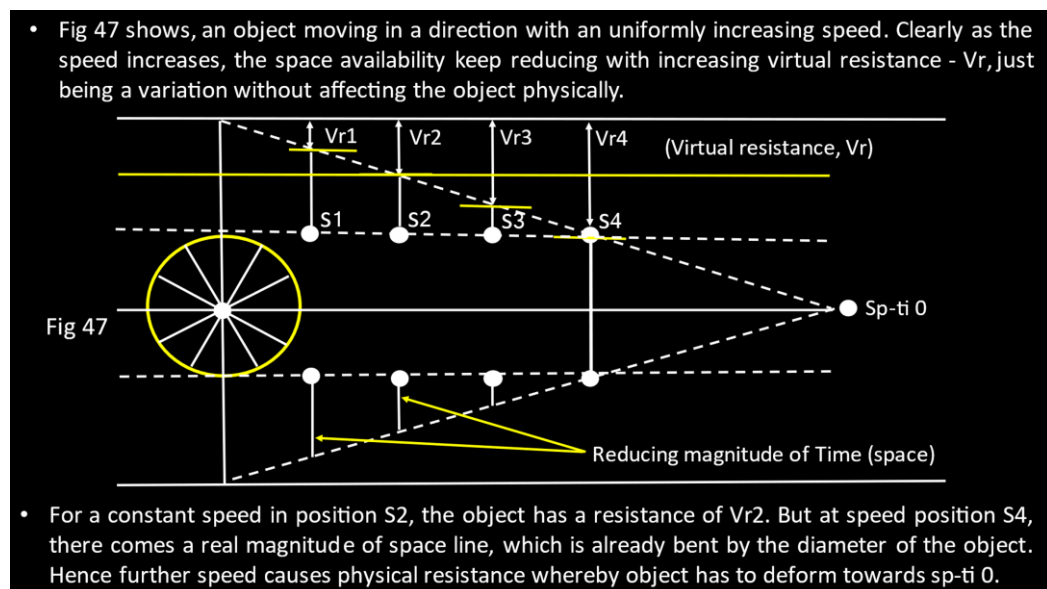
(Single line drawings shall be considered to have drawn in space-time itself)



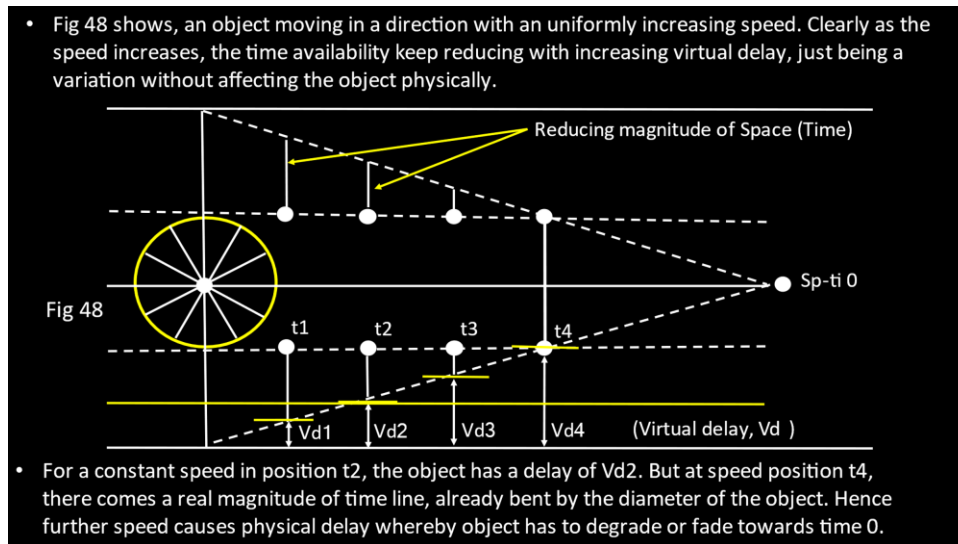
3. EXPERIMENTAL VARIATIONS OF LENGTH CONTRACTION AND TIME DILATION IN REALITY



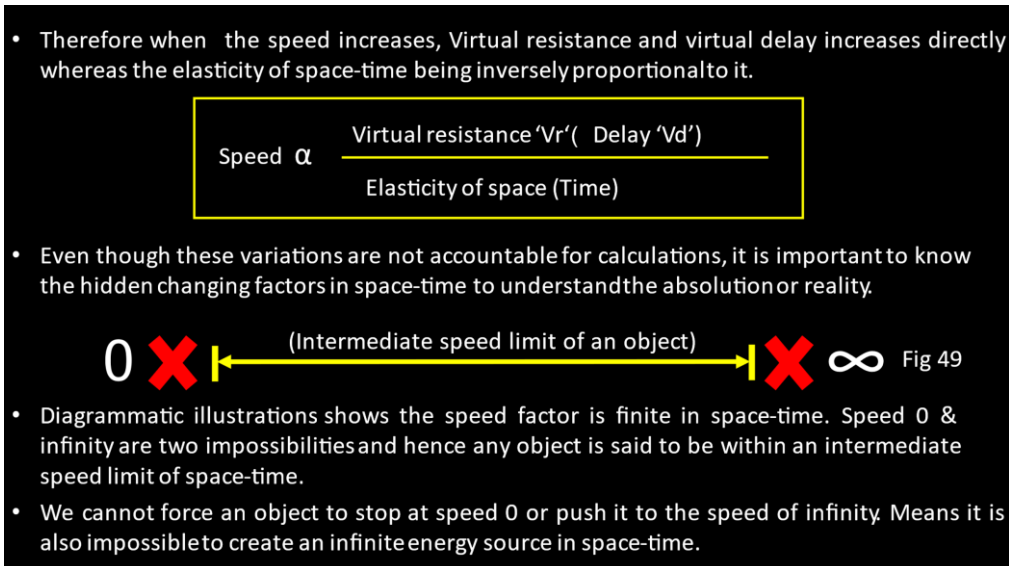
3.1. Length Contraction - Space Contraction Along with Virtual Resistance



3.2. Time dilation - Time reduction along with Virtual Delay



3.3. Non-Physical Variations Due to Object Confinement Within Limits, By Nature



4. DISCUSSION AND CONCLUSION

Points to remember

- 1) In the above studies one may wonder that, as far as outer space known to be empty without resistance, is it acceptable, that an object would crash just by increasing the speed beyond its limit. What could be the speed limit for every object in space?
- 2) No, it has a different interpretation, though the dimensionally converging lines towards sp-ti 0 is obvious for an object to deform or degrade when pushed beyond its limits, there is actually another setup in the path of space-time, controversial to our thinking.
- 3) This path is based on gravitation which causes the object to take a smooth curve without taking physical impact and bending of this curve, increases with increase in speed. There must be a highest possible speed limit for an object beyond which it is no more expected to move away even in a curvilinear path but takes a spiral path and crashes into singularity (sp-ti 0) at the point of applied high speed.
- 4) Speed of light is the highest possible speed in the universe, but it is impossible to push any object to this value with an energy source. However, on ideal case, the object has to crash or disappear into singularity while increasingly pushing beyond its speed limit.
- 5) We have seen the drawings showing that, length contraction and time dilation are just experimental factors in space-time and does not cause any physical changes to the object.

Where length contraction is being a space contraction while the time dilation is actually a time reduction.

- 6) We could clearly see, for a constantly increasing speed, the time available for mobility of the object keeps reducing with increasing virtual delay in terms of dilation. At one point, time is zero with maximum virtual delay at the edge of volume of the object. This is in fact, the point of time dilation to stop and be finite.
- 7) Beyond this point the object physically holds the time with its volume internally. How the living space-time for the object is different from space-time of volume of the object shall be seen in detail with the complete study of gravitation at point level (Means – emerging from or ending to quantum gravity) in fore coming studies.
- 8) **Important note:** In this journal, the variations in length contraction and time dilation are observed with lines perpendicular to the direction of motion of an object, which is misinterpreted for shortening of distance and possibility of time travel respectively in the existing studies.
- 9) For a clock-time in satellites synchronized with clock at ground level (earth), observed to have ticked slower over a period of time, shall not be assumed for time dilation alone but the satellite is said to be living at a reduced space-time scale than objects of the earth. Is this due to orbiting speed of the satellite? or its position with respect to earth's gravitation? could be studied in detail in continuation journals.
- 10) **Conclusion:** Thus, understanding length contraction is important to know time dilation as well and thus space-time together is a key, further to open the doorway to quantum science. However, length contraction and time dilation shall not be separated at any point for any kind of interpretation to be independent of each other. Considering one factor without the other is meaningless indeed.

REFERENCES

- [1] Physics text books of high school and college syllabus, referred for the scientific terms such as length contraction and time dilation. It is visualized in reality which is different from assumptions in proposed theories and formulas of existing studies.
- [2] Mainly referred from Sir Albert Einstein's general & special relativity theory.
- [3] Self-reference: Length contraction and time dilation with real dimensions of space-time. Volume 9, Issue 8, 2022. (International journal of advanced research in physical science (IJARPS) – www.arcjournals.org).

AUTHOR'S BIOGRAPHY



Prabhakaran Natesan, Tamil Nadu, India Bachelor's degree in Electrical and Electronics Engineering (2011) – Affiliated to Anna University, Chennai.

With self-reference, I have my original research work of "Solution for incompatibility between general theory of relativity and quantum mechanics through real dimensions of space-time" (Fundamental drawings).

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