

## Lorentz Length Contraction Is A Real Phenomenon & Not Illusion Of Measurements

2<sup>nd</sup> Course Student – Physics Department - Physics & Math Faculty –  
Peoples' Friendship University – Moscow – Russia -2010-2013

TEL +201022532292 [mrwaheid@gmail.com](mailto:mrwaheid@gmail.com) / [gergesgerges@yandex.ru](mailto:gergesgerges@yandex.ru)

The Assumption Of S. Virgin Mary -Written in Cairo – Egypt – 27<sup>th</sup> November 2019

### Abstract

#### Paper Question:

"Is Lorentz Length Contraction a real phenomenon or illusion of Measurements?"

Or ...

"What's happened For Particle Own Nature, if this particle travels by high velocity?"

We have 2 directions to choose from:

(1<sup>st</sup>) to accept the idea that –Particle own nature doesn't change and the contracted length is found as illusion of measurements

Or

(2<sup>nd</sup>) to accept the idea that –Particle own nature changes with high velocity motion.

I choose the 2<sup>nd</sup> choice- **Why?**

Because – the 1<sup>st</sup> choice tells us that – The particle own nature is defined correctly when no difference in motions velocities found between me and this particle – that means – I'm **The Universe Reference Point** – and this is similar to a person looks at a mirror

Specifically for the previous reason we should refuse both next statements "**Particle Own Nature doesn't Change**" and "**The Proper Length  $L_0$  Never Change**" ....

Lorentz equations for particle length and mass provide the sufficient proof for this fact -

Particle Length And Mass are changing with high velocity motion – which shows clearly that Particle data is created relative to this particle motion.

The previous conclusions are consistent clearly with Lorentz vision based on which Lorentz transformations were created...

The basic difficulty here is found with an old unanswered question let's refer to it:  
How the matter is created? How does any Particle define its data?

### **Conclusion:**

**Lorentz tells us that, Particle own nature and data must be defined relative to this particle motion**

This conclusion we need to discuss in this paper

Gerges Francis Tawdrous +201022532292

E-mail [mrwaheid@gmail.com](mailto:mrwaheid@gmail.com)

LinkedIn <https://eg.linkedin.com/in/gerges-francis-86a351a1>

Academia <https://rudn.academia.edu/GergesTawdrous>

Quora <https://www.quora.com/profile/Gerges-F-Tawdrous>

All my papers [http://vixra.org/author/gerges\\_francis\\_tawdrous](http://vixra.org/author/gerges_francis_tawdrous)

## 1- Introduction

Is Lorentz Length Contraction Is Real Phenomenon or Illusion of Measurements?

$$\Delta l = \Delta l_0 \sqrt{1 - \left(\frac{v}{c}\right)^2}$$

The Equation is clear before our eyes from more than 100 years and still we don't understand it ?!

So 2 visions are found in fighting...

**1<sup>st</sup> Vision tells it's A Real Phenomenon**

**2<sup>nd</sup> Vision tells it's An Illusion Of Measurements...**

Let's provide one example only for each vision and then we should analyze the contradiction reason behind

**(1<sup>st</sup> Reference) -Mechanics -Berkely Physics Course Volume 1**

Page No. 330-331 (last Paragraph)

This is the famous Lorentz-Fitzgerald contraction of a rod moving parallel to its length with respect to the observer. One may worry at this point whether the rod has "actually contracted." **Of Course Nothing Physical has happened To The Rod,** but the process of measurement in the moving frame has given a different result. For a discussion of the figures of rapidly moving objects as photographed with a camera, see the excellent review by Weisskopf. It has been shown, for example, by calculation of trajectories that a moving sphere will photograph as a sphere and not as an ellipsoid.

**(2<sup>nd</sup> Reference)**

**University of Nebraska - Lincoln**

An Introduction to the Special Theory of Relativity

Robert Katz- **Page No. 36**

Is the moving rod really contracted in its direction of motion? Is time really dilated? These questions depend on what is meant by really. In physics what is real is identical with what is measured.

There is no way to assign properties to a rod or to a clock or to an electron except through measurement. **In This Sense The Phenomena We Have Discussed As Time Dilation And The Lorentz Contraction Are Real.**

## Discussion

Shortly ... Is Lorentz length contraction a real or illusion of measurements?

**Lorentz Length Contraction Is A Real Phenomenon...**

So

Why have famous authors written this contraction is illusion of measurements?!

For reasons to be discussed now.

Lorentz transformations were created – in that time - based on electrodynamics studies, theories and experiments –

Many studied in that time led to one clear conclusion which is

**"The Matter Must Be Created Of Electromagnetic Waves Or At Least The Matter Creation Depends On Electromagnetic Waves"**

The fighting to give a birth for the Special theory of Relativity was at apex – during this period – because the whole science of electromagnetic and electrodynamics was in serious risk because of Michelson and Morly Experiment –

So serious tries were used to create a solution for the clear contradiction between the theory and empirical proves –

Then after the serious fighting, the Special Theory of relativity is born to a piece of Gold to answer the main hard questions and save the whole science....

Now we return to the basic problem again...

How the matter is created? How does any particle define its data??

Planet motion is interpreted basically based on Newton Gravitation Theory –where the gravity forces depends on the Sun And Planet Masses

i.e. Planet moves based on its mass

Or

Planet moves because of its masses relative to the sun mass

This is the main rule – on which all solar planets motions interpretation

So the motion is a result of the mass

**Conclusion**

**Planet Motion is a result of Planet Data....**

This conclusion simply contradicts with the abstract conclusion ...let's remember it :

**Conclusion:**

**Lorentz tells us that, Particle own nature and data must be defined relative to this particle motion**

So what's the reason and what's the result? Planet data is a result of its motion or planet motion is a result of its mass?

I try to show that – there's a serious reason pushed the famous authors to claim that the contraction is an illusion of measurements – they have to do that – because if Particle real length is contracted by its high velocity motion so this particle data should be considered as a result of Particle motion – and based on that – we will have no reason for Planet motion – because Planet Mass itself will be considered as a result of Planet motion

I have tried to show that – the contradiction isn't created for some simple reason – on the contrary – the contradiction is found deeply in the physics basics!

The solution is found when we answer "**How The Matter Is Created?**"

This paper tries to analyze Lorentz Length Contraction as deep as possible

**2- Methodology** (Methodology Is Repeated In All My Papers) It's written in

Why Don't We Understand The Solar System Geometry? <http://vixra.org/abs/1911.0018>

### **3- Lorentz Length Contraction Is A Real Phenomenon**

3-1 Famous Authors Comments Concerning Lorentz Length Contraction

3-2 A historical vision for the contradiction reason

3-3 Why Lorentz Length Contraction is A real Phenomenon and NOT illusion of Measurements.

#### **3-1 Famous Authors Comments Concerning Lorentz Length Contraction**

I provide comments from 5 textbooks (including the mentioned 2 comments)

##### **(1<sup>st</sup> Reference) -Mechanics -Berkely Physics Course Volume 1**

Page No. 330-331 (last Paragraph)

This is the famous Lorentz-Fitzgerald contraction of a rod moving parallel to its length with respect to the observer. One may worry at this point whether the rod has "actually contracted." **Of Course Nothing Physical has happened To The Rod**, but the process of measurement in the moving frame has given a different result. For a discussion of the figures of rapidly moving objects as photographed with a camera, see the excellent review by Weisskopf. It has been shown, for example, by calculation of trajectories that a moving sphere will photograph as a sphere and not as an ellipsoid.

##### **(2<sup>nd</sup> Reference)**

**University of Nebraska - Lincoln**

An Introduction to the Special Theory of Relativity- Robert Katz- **Page No. 36**

Is the moving rod really contracted in its direction of motion? Is time really dilated? These questions depend on what is meant by really. In physics what is real is identical with what is measured.

There is no way to assign properties to a rod or to a clock or to an electron except through measurement. **In This Sense The Phenomena We Have Discussed As Time Dilation And The Lorentz Contraction Are Real.**

##### **(3<sup>rd</sup> Reference)**

**Costas Christodoulides**

The Special Theory of Relativity Foundations, Theory, Verification, Applications

Page 70 – Last Paragraph

**It Must Be Understood That Nothing Happens To The Rod Due To Its Motion Which Causes Its Contraction.** There is no change in its atomic structure, for example. The difference in the results of the measurements of the length in the two frames of reference may be understood if we examine the moments in time at which the measurements were made, as these are observed in the two frames of reference. In frame  $S'$ , the measurements at the points  $x_0 A$  and  $x_0 B$  were both performed at time  $t_0$ .

The times at which the measurements were seen to be performed in frame  $S$ , are, respectively,

**(4<sup>th</sup> Reference)**

**The Special Theory Of Relativity- Lecture Notes prepared by J D Cresser**  
**Department of Physics- Macquarie University-**  
Page 22

This phenomenon is known as the Lorentz-Fitzgerald contraction. It is not the consequence of some force 'squeezing' the rod, **But It Is A Real Physical Phenomenon With Observable Physical Effects**. Note however that someone who actually looks at this rod as it passes by will not see a shorter rod. If the time that is required for the light from each point on the rod to reach the observer's eye is taken into account, the overall effect is that of making the rod appear as if it is rotated in space

**(6<sup>th</sup> Reference)**

**Albert Einstein Book**

**Relativity: the special and the general theory**

Translated by robert w. lawson, University of Sheffield Introduced by nigel calder

**Page No. 49**

If we now assume that the relative distances between the electrical masses constituting the electron remain unchanged during the motion of the electron (rigid connection in the sense of classical mechanics), we arrive at a law of motion of the electron which does not agree with experience. Guided by purely formal points of view, H. A. Lorentz was the first to introduce the hypothesis that the form of the electron experiences a contraction in the direction of motion in consequence of that motion, the contracted length being proportional to the expression

$$\sqrt{1 - \frac{v^2}{c^2}}$$

This hypothesis, which is not justifiable by any electrodynamical facts, supplies us then with that particular law of motion **Which has Been Confirmed With Great Precision In Recent Years**.

**Discussion**

Clearly Physics Main Books Are In Conflict With Each Other!

Half Books tells "**It's Real Contraction**" and this party tries to protect the physics research methods validity – because we use the experimental measurements and produce the length contraction –so how we can attribute any property without measurements?

The other Half of Books tells "**This Contraction Is An Illusion Of Measurement**" and this party tries to protect the description that the matter is found independent regardless any motion– and based on that – the planet moves by masses gravity, otherwise we will not have a clear reason causes the planet motion!

Again let's ask

Why is the special theory of relativity (SR) so difficult to be understood?

While we don't know **How The Matter Is Created**? Or how Particle data is created?  
Einstein didn't fight in this point at all!

He simply left it behind – and move further – tells us that –**Particle data** – which we don't know how is created?!- will be changed because of the high velocity motion!

What's the relationship between the motion velocity with the particle data?!

No answer

The particle data change provides more puzzles! Where we can't see its consistency.  
Why these specific 3 data (length, mass and time) should be changed because of the higher velocity motion?!

Also we don't understand the reason of length contraction...

Because we can't see the data direction!

If we accelerate a particle, so we provide energy to this particle, so logically this particle mass may be increased because the particle own energy is increased

But why the length is contracted? The particle has more energy, means, it should have more mass, more volume and increasing in particle different data....so the particle length should be longer and not contracted.... !

SR provides us with more complex puzzles we as the following:

### **No.1**

Particle length and mass are effected with high velocity motion –Why?

i.e.

Particle properties are changed with high velocity motion! Why ?

### **No.2**

Particle length and mass as well as distance and time are changed with high velocity!

Why Lorentz transformations can't distinguish between Particle Data and Spacetime Coordinates – on the contrary – for all the equations are just similar!

Why we think that, Particle Data is distinguish from distance and time coordinates?

### **No3.**

If Particle length and mass are effected by high velocity motion! why we have no equation between them (particle length and mass) – also we know  $E=mc^2$  but we have no an equation between particle length and its Energy!



### 3-2 A Historical Vision For The Contradiction Reason

The contradiction – which we have seen between the physics books – is originated – as I guess – after the Special Theory of relativity Birth and before The General one

#### **The problem is clear as the sun herself**

(1)

The Special Theory of relativity is found to solve the contradiction between the electromagnetic & electrodynamics theoretical science with the empirical results – the whole science was in risk and needs a final and real solution which must be deep enough reaching to the truth himself – to protect the great huge work in the electricity and Magnetism sciences during around 3 centuries of human life

There's no temporary solution can be acceptable – the electromagnetic empire needs real basics to save its future

So

The great scientist have tried to solve with many theories and hundreds of experiments – trying to find this solution...

(2)

Einstein had gathered – as I guess- all available data, theories, experimental results and the new researches ... put all of them before his eyes trying to find the link which can connect all this material together -

The great scientist – has his real courage and self-confidence to accept such hard battle to do – and then SR is born

(3)

The rest question is

How does the planet move?

Newton told us – by Masses Gravity-

But

Lorentz Transformation tells us that – the particle data must be created depending on particle motion –

in fact

during 1850 – 1910 there's a real feeling that the particle is created from the electromagnetic waves or at least depending on electromagnetic waves

But this feeling will remove our answer "how does the planet move?"

Newton explanation for planet motion needs Planet mass to be found independent from any other motion – which clearly contradicts the basics on which SR is born

So, The General Theory of Relativity is born with answering for the basic question

How the matter is created? Is Mass found based on motion or motion is found based on mass?

From that date 1920 – the physicists step by step move far from Lorentz basic description about Matter Creation and they supported Newton Description that the Mass is created independently and doesn't depend on any motion -

### 3-3 Why Lorentz Length Contraction is A real Phenomenon and NOT Illusion Of Measurements.

#### How the matter is created?

This is one of my basic questions ...

I analyze Planets Data to understand how this data is created.... For example I ask Why does Uranus diameter =51118?

How this value is created?

In Planets data analysis – I have found that – Planet diameter is created almost relative to another planet diameter...!

That means – the big bang concept is a absolute mistaken – because we don't deal with any random process here – we deal with one building –

I mean – the solar system is one building – each planet is a part of this same building-based on this description ant planet data is created relative to other planets data

That because – the solar planets and the sun herself all of them are created relative to each other to consist one building (or one machine) – because of that any planet data is relative and complementary to other planets data

That's why we see the sun disc = the moon disc ...because

**(The Sun Diameter / The Moon Diameter) = (Earth Orbital Distance/ Earth Moon Distance)**

The moon and sun diameters are created relative to their distances to Earth

That tells us

The solar system is a puppet theater – there's one energy (one thread) connect all puppets together – they are one machine –

Also in motion – the solar planets move together as train carriages move together

#### Conclusions

- 1- The Matter Is Created Of Electromagnetic Waves Or At Least The Matter Is Created Deepening On Electromagnetic Waves
- 2- The Solar System Is A Continuum And Not Separated Planets From Each Other
- 3- The Solar System Is A Continuum because the space is NOT created or found independently from the matter creation – on the contrary – the space is created relative and complementary to created matter – because the space is the medium in which the matter will move – for that reason – the space and matter are created together complementary to each other – this information we can conclude from the previous question – why we see the sun disc = the moon disc ? because the matter and space are created complementary to each other

The contradiction which we have found in the physics textbooks can be solved only if we answer clearly the question

#### How The Matter Is Created?

#### Lorentz Length Contraction (More Discussion)

<http://vixra.org/abs/1911.0431>

or

[https://www.academia.edu/41051506/Lorentz\\_Length\\_Contraction\\_More\\_Discussion](https://www.academia.edu/41051506/Lorentz_Length_Contraction_More_Discussion)