

# Time Trap

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**[Abstract]** The argument on the time space in the classical physics and that in the theory of relativity has been the bone of contention for more than one hundred years. Well than, which one is more reasonable? Through this paper I hope we can have a distinct and profound understanding on time, and I hope that we can return a clean sky to physics.

**Keywords:** Time; Lorentz transform; Time dilation; Gravitational mass; Inertial mass

## 1. Time

What is time?

Time is just as an immensely long river flowing from the antiquity to the future.

*The Analects of Confucius says: It was by a stream that the Master said --Thus do things flow away!'.*

*Time is like a rushing river ceaselessly on the move. It's like the water of Yellow River from the sky, which flushes into the sea without ever turning around.*

*But how can Yellow River whose flow is always break compare with time?*

*Time is like the sun and stars in the sky, rising in the east and setting in the west day after day. Time is like the immense Milky Way, going round and round ceaselessly forever.*

*But the Milky Way cannot compare with the huge time either.*

*Lei yuanxing said that, the gear wheel of time juggles the whole universe and drives all galaxies to hover to the everlasting future.*

*And Newton has ever said that 'The absolute, real or mathematical time, itself and to the extent of its nature, always lapses uniformly, having nothing to do with any outside body.'*

Time is the most essential objective being in the universe, or time is the reflection of the total existence and changes in the whole universe. Time is the most essential foundation stone of the physics.

Time is our sole measurement tool for the process of universal existence and changes. Of course, this kind of measurement is regulated by a time system on the earth's surface familiar to us.

## 2. Is Lorentz Transform Absurd?

Why has the so-distinct time concept been changed?

The reason lies in Lorentz transform in the theory of relativity. It can be said that Lorentz transform is the magic weapon of the theory of relativity, which can bring you into a logically strange loop as well as let you experience the relativity completely.

Well then, does Lorentz transform itself exist antinomy?

We do not make the round of it, instead, we go back to the basic springboard of Lorentz transform.

### 2.1 Time Standard in Physics

Before discussing, I emphasize the time standard in dealing with physical problems definitely.

The time system is uniform in the same reference frame. Then if we refer to a certain time, are points in the same reference frame all at this time? Of course yes!

Taking an even more obvious example. Supposing that all the clocks in China have been collated to be synchronous, when the clock in a place is at 12 o'clock of Beijing standard time, well then are clocks of different places in China at the same time? Of course yes!

The time of different point in the same reference frame is completely the same, which is the reference frame's time.

### 2.2 The Most Basic Lorentz Transform

Dear friends, now let's see Lorentz transform together, which is the mathematical foundation of the theory of relativity.

Lorentz transform describes the relationship of a point's time space coordinates (e.g. Point P) in different inertial reference systems.

As shown in figure1. There are two inertial reference systems  $K'$  and  $K$ . The reference system  $K'$  is traveling in the positive direction along  $x$  axis in the reference system  $K$ , with a speed  $v$  to  $K$ . When the two coordinate origins  $O$ 、 $O'$  are at the state of superposition, supposing the time in the two reference frames is zero, that is  $t' = t = 0$ .

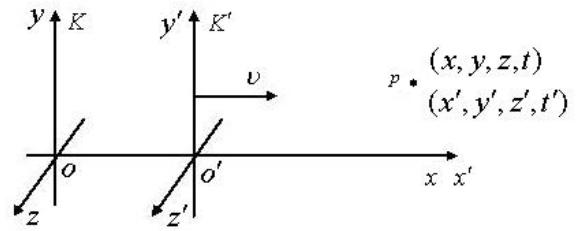


Figure 1

Now we describe the time space coordinates of point P in different space inertial system. In  $K$  system, the time space coordinates of point P is:  $(x, y, z, t)$ ; In  $K'$  system, the time space coordinates of point P is:  $(x', y', z', t')$ .

Lorentz positive transform	Lorentz negative transform
$x' = \frac{x - vt}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma(x - vt) \quad (1)$	$x = \frac{x' + vt'}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma(x' + vt') \quad (5)$
$y' = y \quad (2)$	$y = y' \quad (6)$
$z' = z \quad (3)$	$z = z' \quad (7)$
$t' = \frac{t - \frac{v}{c^2}x}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma\left(t - \frac{v}{c^2}x\right) \quad (4)$	$t = \frac{t' + \frac{v}{c^2}x'}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma\left(t' + \frac{v}{c^2}x'\right) \quad (8)$

### Emphasis:

Lorentz transform describes the relationship of a point's time space coordinates in different reference systems. Lorentz positive transform and Lorentz negative transform are equivalent.

### 2.3 The Time Trap

After a survey on Lorentz transform, let's look at the figure 1 again. The theory of relativity believes *when the two coordinate origins  $O$ 、 $O'$  are in the state of superposition,*

*supposing the time in the two reference frames is zero, that is  $t' = t = 0$ .*

That is, the time of every point in the two reference systems is zero at this moment, the time of the point in  $K$  is  $t = 0$ , while  $t' = 0$  in  $K'$ .

However, while deducing by the equation(4) of Lorentz transform, we get the result that time of the point in  $K$  is  $t = 0$ , but

$$t' = \gamma(t - \frac{v}{c^2} x) = -\gamma \frac{v}{c^2} x \quad (1.1)$$

in  $K'$ . It is obvious that time of different points in  $K'$  system is completely different. This is conflicting to the assumption at the beginning.

While deducing by the equation(8) of Lorentz transform, we get the result that time of the point in  $K'$  is  $t' = 0$ , but

$$t = \gamma(t' + \frac{v}{c^2} x') = \gamma \frac{v}{c^2} x' \quad (1.2)$$

in  $K$ . It is obvious that time of different points in  $K$  system is completely different. This is also conflicting to the assumption at the beginning.

**—Lorentz transform has dropped into a time trap at the very beginning.**

## 2.4 Twins Paradox

People have condemned the twins paradox on the logical problem of the theory of the relativity for more than one hundred years. To avoiding the chicanery of supporters of the theory of relativity, we bring up the problem more spiculately.

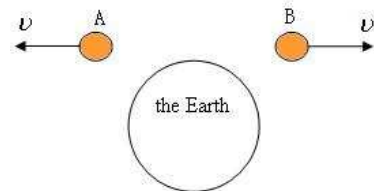


Figure 2

As shown in figure 2. Now the twins A and B fly away the earth by airships in the opposite directions with the uniform speed simultaneously. Some years later, they turn around simultaneously, flying to the earth at the same speed and landing simultaneously. Here, we ignore the accelerating process.

**Who is younger?**

According to New Physics, the motions of A and B to the No-Shape-Substance-Space are equivalent, so the twins will at the same age.

### **But what will happen in the theory of relativity?**

We can derive the following conclusions from it.

- 1) From the angle of view of A, it looks as if that B is younger because it is moving and its clock is slower.
- 2) From the angle of view of B it looks as if that A is younger because it is moving and its clock is slower.

Well then, is not the theory of relativity self-contradictory?

When the twins stand to each other face to face, if only they have a normal thinking, they will not believe in the theory of relativity. There are only two results.

1) They are at the same age. That is, neither of the observing results according to the theory of relativity is trustable.

2) One of them is younger than the other. Then which one is younger?

—No matter in physics or mathematics, there are not values, that A is bigger than B while B is bigger than A.

It can be said that there is antinomy like the above one in all the problems on the time transforming in the theory of relativity.

### **[Illustrations]**

Most supporters of the theory of relativity always use the general relativity to prevaricate the twins paradox like this: There is an acceleration. The effect of the acceleration and that of the speed on time happen to counteract each other.

What is more, many supporters of the theory of relativity bring up dozens of incompatible formulas to testify the twins paradox strictly. But a great of experiments demonstrate that the acceleration has nothing to do with time dilation.

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*There are many experiments including an accelerating process in experiments validating the time dilation. And the range of the acceleration is very wide. For example, in the experiment of atomic clock sailing around the world, the acceleration centripetal on the clock is  $10^{-3}g$ , where  $g$  is the acceleration of gravity on the earth's surface; in the running-disk experiment, the acceleration centripetal of the light source extends to  $10^5g$ ; in the experiment investing on the temperature dependence of Mossbauer effect, the vibrating acceleration of the nucleus in the crystal lattice and the acceleration centripetal of the meson moving in circle are both larger than  $10^{16}g$ . Although the range of the*

*acceleration is so wide, almost all the experiments get the result consistent to time dilation caused by the speed, which is predicted by special relativity. This fact indicates that, the acceleration has no contribution to time dilation in the experiment. Even if we admit the existence of the effect of time dilation, it can only say that the effect is caused by the speed instead of the acceleration.*

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**The problem of twins paradox is the logical contradiction that the theory of relativity cannot avoid.**

### **3. Probing into the Theory of Relativity from the Deducing Process of Lorentz Transform**

Time exists objectively, which is the foundation for human being to understand the world, as well as the most essential foundation stone of physics. However, the theory of relativity believes that time in different inertial systems is different and variational. Well then, how time is changed? What kind of great reason makes it changed?

#### **3.1 The Derivation of Lorentz Transform**

Friends. How does the time space view of the theory of relativity come out? Let's look at the derivation of Lorentz transform at first.

For the sake of an easy comprehension, I generalize the deducing process at first.

The first step, transforming the time space coordinates of point P to get a group of transforms.(This includes the principle of relativity generally.)

The second step, when origins  $O, O'$  are in the state of superposition, calculating the time coordinates formula of the light signal from the origin to the point P, according to the principle of constancy of light velocity.

The third step, through the substitution of formulas getting in the first two steps to each other, we can achieve Lorentz transform finally.

#### **[About the Derivation of Lorentz Transform]**

As shown in figure 1. Whenever observing the origin  $O$  of  $K$  system in the system of  $K$ , we get  $x = 0$ . But when observing in the system of  $K'$  at the time of  $t'$ , we get the coordinate of  $O$  is  $x' = -vt'$  or  $x' + vt' = 0$ . It is obvious that the numerical values

of  $x$  and  $x' + vt'$  are both zero relating to the same point  $O$  in the space. However, when considering the general case of the relationship between them, we can suppose that the relationship between  $x$  and  $x' + vt'$  is linear, that is

$$x = k(x' + vt') \quad (1.3)$$

Where  $k$  is a constant relational to  $v$ .

It is the same as before that to the origin  $O'$  in the system of  $K'$ , we get

$$x' = k'(x - vt) \quad (1.4)$$

But according to the principle of relativity of special relativity, these two inertial systems are equivalent, that is the equation (1.4) and (1.3) should have the same form except  $v$  and  $-v$ . This requires  $k' = k$

$$x' = k(x - vt) \quad (1.5)$$

From figure 1, we can get the relation between  $y$  and  $y'$ ,  $z$  and  $z'$  respectively.

$$y = y' \quad (1.6)$$

$$z = z' \quad (1.7)$$

Now we discuss the transforming relation between  $t$  and  $t'$ . Substituting  $x'$  in equation (1.3) with  $k(x - vt)$  in equation (1.5), we get

$$x = k^2(x - vt) + kv't'$$

Then we can get the following result:

$$t' = kt + \left(\frac{1 - k^2}{kv}\right)x \quad (1.8)$$

These are some coordinates transforming formulas through the principle of relativity, and the calculation of  $k$  in these formulas relies on the second assumption of principle of constancy of light velocity. Therefore, when origins  $O$  and  $O'$  are in the state of superposition ( $t' = t = 0$ ), there is light signal emitted from the superposition along the axis  $Ox$ . We can get the light signal's coordinates at the point P relating to two coordinates systems as below.

$$x = ct \quad (1.9)$$

$$x' = ct' \quad (1.10)$$

Substituting  $x'$  and  $t'$  in equation (1.10) with  $k(x-vt)$  in equation (1.5) and  $kt + (\frac{1-k^2}{kv})x$  in equation (1.8) respectively, we get

$$k(x-vt) = ckt + (\frac{1-k^2}{kv})cx \quad (1.11)$$

Resolving  $x$  according the equation (1.11), and then comparing the result with the equation (1.9), we can get

$$k = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} \quad (1.12)$$

The equations getting from the process of substituting  $k$  in equations (1.5) and (1.8) with the result of the equation (1.12), will constitute Lorentz transform in company with equations (1.6) and (1.7).

—The deriving process is extracted from Physics. Ma Wenwei, Tan Summei, Ke Jingfeng . Higher Education Press, the fourth edition in November of 1999(the first edition in June of 1978).

## 3.2 Oppugnation

### 3.2.1 Why the Time of the Same Point in Different Reference Systems is Different?

Maybe it is Mr. Einstein's neglect!

If one of the supporters of the theory of relativity is more brilliant than Mr. Einstein, please explain the following question definitely. The question is why the time  $t$  and  $t'$  of the same point P in different inertial systems  $K$  and  $K'$  is different.

What is time?

What are the physical meanings of  $t$  and  $t'$  respectively?

Since the theory of relativity considers the time  $t$  and  $t'$  of the same point P in different inertial systems  $K$  and  $K'$  to be different, well then how does the variable  $t$  contact with the variable  $t'$ ? Why do they contact with each other in such a way? And how about its importance?



### 3.2.2 Is This the Time Standard of the Theory of Relativity?

Please examine the whole deducing process carefully.

The reason for introducing the principle of constancy of light velocity into the derivation, and the reason for the deduced result of Lorentz transform, is just on equations (1.9) and (1.10), that is  $x = ct$  and  $x' = ct'$ .

**(Illustration: Sometimes we use the formulas as below in the derivation.  $x^2 + y^2 + z^2 = c^2t^2$ ,  $x'^2 + y'^2 + z'^2 = c^2t'^2$ . In fact, the above two formulas are contrary to equations (1.9) and (1.10). We do not discuss this contradiction here.)**

The thing you must pay more attention on is that in the whole deducing process variables  $t$  and  $t'$  are replaced completely equally.

**From this we can get the following conclusion.**

In the reference frame  $K$ , the time  $t$  in the time space coordinates  $(x, y, z, t)$  of the point P is equal to that in the equation  $x = ct$ , that is the time taken by light travelling from the origin  $O$  to this point.

While in the reference frame  $K'$ , the time  $t'$  in the time space coordinates  $(x', y', z', t')$  of the point P is equal to that in the equation  $x' = ct'$ , that is the time taken by light travelling from the origin  $O'$  to this point.

Doesn't this reveal the connotation of time and the time standard in the theory of relativity?

Take the reference frame  $K$  for example. The time standard in the theory of relativity is that the same  $x$  has the same time  $t$ .

**(Illustration: If we do the substitution by the formula  $x^2 + y^2 + z^2 = c^2t^2$ , we will get the following time standard in the theory of relativity, that is, points that have the same distances to the origin  $O$  have the same time  $t$ .)**

In another words, the time of different points in the theory of relativity is asynchronous, while the time of points in a spherical surface which has the same distance to the origin is the uniform.

Does this consist with our intrinsic physical habits? Of course not. In classical physics, the time in the same reference frame is always synchronous.

**Is the time standard in the theory of relativity in reason?**

**Is the time of a point fixed or stopped, when the point is stable and has a fixed distance to the origin in an inertial system? Is the time of a point fixed or stopped, when**

the point moves on a spherical surface that has a fixed distance to the origin in an inertial system?

### 3.2.3 Is This Our Way to Change the Time Space Concept?

If we examine the foregoing deducing process, we can realize that Mr. Einstein has changed the concept slinkingly. It is just like a magic.

The first step, putting the time space coordinates of a point into some formulas while stirring it to confuse you completely.

The second step, bringing in the relationship between the time and distance of taken by light from the origin to this point suddenly.

The third step, by substituting formulas getting from the first two steps one to another, the work of changing the concept is finished naturally in front of you.

## Peradventure

### The first one.

Is the time  $t$  in the time space coordinates  $(x, y, z, t)$  of the point P in the system  $K$  the equivalent to that taken by light traveling from the origin  $O$  to this point? No. But Mr. Einstein made them the equivalence by contraries.

When the point P is motionless to the system  $K$ , the time taken by light traveling from the origin to this point is a certain and unique value. But the time  $t$  in the time space coordinates  $(x, y, z, t)$  of the point P in the system  $K$  has infinite values that changing continually.

Isn't it muddleheaded to replace infinite values with a unique one? It just takes a part for the whole.

From Einstein's opinion on the describing logic of time, we get the following result.

——Is a white horse a horse? Yes, it is. So horse is just white horse.

——Is the number 1 an integer? Yes, it is. So the integer is just 1.

Well then, since a black horse is a horse, is it also a white horse? Since the number 100 is an integer, is it also 1?

### The second one.

In classical physics, the time of the point P is objective. No matter which reference

system the point belongs to, the time standard is the same. But the theory of relativity changes the objectivity of time importunately. Well then who can explain the reason on altering the objectivity of time of a point P? What is the great reason that changes the objectivity of time?

——Does it just rely on the so-called reason that time values  $t$  and  $t'$  taken respectively by light from the origins  $O$  and  $O'$  to a point P are different?

Putting the validity of principle of constant speed of light aside at first. If two people go to school simultaneously from the same home, but they arrive at the school at different time, can we say that the school has two different time systems? The same question is in the case of 100 people and 100 time systems.

What kind of logic is it?

Furthermore, now that in the point of view of the theory of relativity, that time values  $t$  and  $t'$  taken respectively by light from the origins  $O$  and  $O'$  to a point P are different, well then, when the light emitted from the origin  $O$  arrives at the point P, the equation  $x = ct$  comes into existence; while the light emitted from the origin  $O'$  does not arrive at the point P, or it arrives early, the equation  $x' = ct'$  will not come into existence.

——In another words, equations  $x = ct$  and  $x' = ct'$  can't exist at one time.

Well then isn't it self-contradictory to use the two equations at the same time in the processing derivation?

### **The third one.**

When origins  $O$  and  $O'$  of the two reference systems are in the state of superposition, the light signal is emitted from the same point of the space. Since the light speed has nothing to do with the speed of the light source (the light emitted from the point  $O'$  has nothing to do with the motion of it), and distance from the point to us is certain, well then do the two light signals arrive at us simultaneously?

### **The fourth one.**

Since the light just acts as a signal, how about we take the sound or a bird as the signal?

Won't we create many theories like the theory of relativity, such as the sound

speed's relativity, bird's speed's relativity and the snail's relativity?

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**3.3 Consulting to the Masters of Theory of Relativity.**

Dear masters,you must know the theory of relativity well,now let me consult some questions to you!

1) The Lorentz transform describes the relationship of a point's time space coordinates  $(x, y, z, t)$  and  $(x', y', z', t')$ ,or the relationship between the time space coordinates of one physical incident.

2) When Einstein derived the Lorentz Transform,he derived the relationship of one physical incident's time space coordinates  $(x, y, z, t)$  、  $(x', y', z', t')$  wherever or whenever this incident happed.

3) Dear sirs,maybe I am too foolish to understand these procedures, could you please help me to deduce one incident?-----You are to help me devise only one incident!

As shown in Figure3, there are two inertial reference systems  $S'$  and  $S$  . The reference system  $S'$  is traveling in the positive direction along  $x$  axis in the reference system  $S$  , with a speed  $v$  to  $S$  . When the two coordinate origins  $O$  、  $O'$  are at the state of superposition, supposing the time in the two reference frames is zero, that is  $t' = t = 0$  .

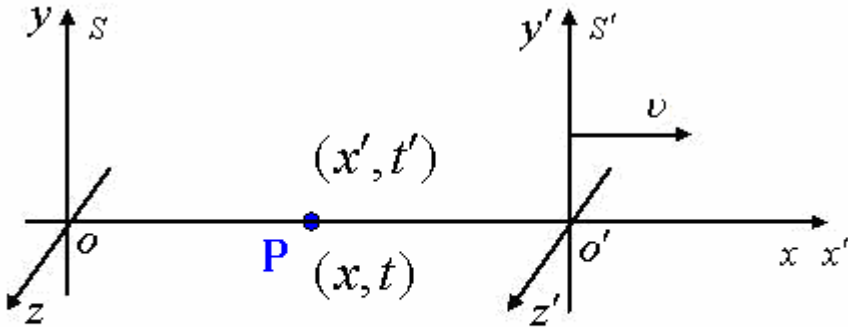


figure 3

In order to simplify this matter, let's deduce one incident which happens in the axes

$x$  and  $x'$  !

What is this incident?

That is in S system, an incident happens where  $x = 1000$  m and when  $t = 10$ h ,(a bomb explosion for example).

Dear Sirs,now help me deduce the Lorentz Transform between one incident's time space coordinates!(Attention please ,not application but derivation)

Of course, you can think that the principle of constancy of light velocity is right!

Of course ,you can think that the thoery of relativity is right!

Of course, when origins  $O, O'$  are in the state of superposition,the light signal can come out, however strong it is !

Do please!

Now let's see together that ,in broad daylight,how we can explain the concept of time using the principal of constancy of ligh velocity!

### [Illustrations]

Dare the supporters of thoery of relativity answer these simple questions?

Of course not,they dare not face them and they cannot answer them.

Before we have generalized the rules of Lorentz Transform deducement:

The first step, putting the time space coordinates of a point into some formulas while stirring it to confuse you completely.

The second step, bringing in the relationship between the time and distance of taken by light from the origin to this point suddenly.

The third step, by substituting formulas getting from the first two steps one to another, the work of changing the concept is finished naturally in front of you.

Of course the supporters of theory of relativity do not recognize that they changed the concepts slinkingly,well then let them deduce Lorentz Transform step by step!

Whichever duducement of Lorentz Transform will adoprnt the principle of constancy of light velocity, and “the time that the light when origins  $O, O'$  are in the state of superposition travels to that point” substitutes “the time that the incident took place”!

When Einstein deduced the theory, he put all the points and incidents together and made a confusion, well then let us open our eyes to see how they deduce it one by one!

In the simple example described in Fig.3, the incident took place when  $t = 10\text{h}$ , while according to the principle of constancy of light velocity, the time that light travels from the origin to this point :

$$t = \frac{x}{c} = 3.34 \times 10^{-6} \text{ s}$$

**Let's open our eyes;**

**Who dare say 10 hours equals to  $3.34 \times 10^{-6}$  seconds?!**

### [Further Illustrations]

Let's further analyse the incident discussed before.

### The Processment of Classical Physics

Firstly let's see how the classical physics processes it:

- 1) The classical physics thinks that time is the most essential objective being in the universe, or time is the reflection of the total existence and changes in the whole universe. It is the same whichever reference system it is in! Obviously:

$$t' = t \quad (1.13)$$

- 2) The classical physics thinks the distance between two points is objective, and is a space length. It is all the same in any reference system.
- 3) The classical physics thinks velocity equals distance dividing by time. When the space distance and time are separately equal, the relative velocity between two reference systems must equal in values and opposite in the direction.

According to the above, yields:

$$x' = x - vt \quad (1.14)$$

## The Processment of Theory of Relativity

- 1) The theory of relativity thinks that the time in two reference systems may not be equal----if equal,there will be time dilation!
- 2) The theory of relativity thinks that between two reference systems,the space length of the two points may not be equal. ——if the space length of two points are equal,than length contraction won't occur.
- 3) Since that space length as well as time may not separately equal, the relative velocity between two reference systems may not be euqal too,obviously.

——The ralative velocity of two reference systems are equal,which is the result of classical physics.However,the theory of relativity takes advantage of this result,which is too absurd!

Now you see,based on the theory of relativity, it is even impossible to draw the general solution formula with some coefficients between time space coordinates  $(x', t')$  and  $(x, t)$  for the incident above!!

Let alone change time concept slinkingly taking advantage of the principal of constancy of light velocity in the daylight!

**Now who can deduce the fake Lorentz Transform???**

## 4. The experimental fact of the Prolongation of the Life-span of a Moving Particle

The reason for people to believe the time space concept of the theory of relativity is on the reality that the life span of a particle moving with a high speed to the earth's surface has really become long.

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*There are a number of high-speed  $\mu^-$  mesons within the cosmic rays from the outer space.*

*In an experiment conducted at the top of a mountain with 1910 meters high in 1963, the number of the  $\mu^-$  mesons whose vertically downward velocities vary from  $0.9950c$  to  $0.9954c$  is measured. And it turned out that there was  $563 \pm 10$   $\mu^-$  mesons per hour on an*

average. Also the number of the  $\mu^-$  mesons with the same range of velocity is measured at the altitude of 3 meters above the sea. As a result, it was found that the average result is  $408 \pm 9$ . The time it takes for a  $\mu^-$  meson to fall from the top of the mountain to the sea level should be :

$$t = \frac{(1910 - 3)m}{0.9952 \times 3 \times 10^8 \text{ m/s}} = 6.4 \times 10^{-6} (s)$$

This time is four times as long as the half-life ( $T_{1/2}$ ) of an immobile  $\mu^-$  meson. If the half-life of an  $\mu^-$  meson moving at a high speed is equal to that of an immobile one, it is expected that the number of the  $\mu^-$  mesons near the sea level should be less than  $\frac{563}{2^4} (\approx 35)$  after their flying through a distance of 1907 meters. However, the practical number acquired from the experiment is 408. This clearly indicates that the half-life of a moving  $\mu^-$  meson extends or in other words its process of disintegration becomes slow.

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#### How should we explain the problem in this experiment?

As shown in figure 4, similarly,  $\mu^-$  is also made up of smaller mass units and the mutual collisions among these mass units cause the disintegration of the  $\mu^-$  meson. When a  $\mu^-$  meson moves at a high speed in the No-Shape-Substance near the earth's surface, the inertial mass of every mass unit composing the  $\mu^-$  meson increases, and at the same time the relative speed of every mass unit decreases due to the unchanged vibration momentum. As a result, the time interval of collisions among these mass units of the  $\mu^-$  meson increases, and thus the life span of the  $\mu^-$  meson extends.

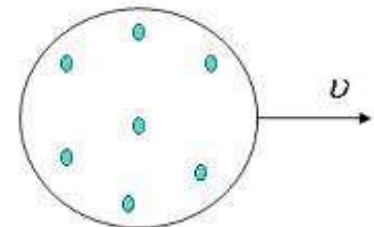


Figure 4

We will estimate the life span of a  $\mu^-$  meson by means of the following method.

When a  $\mu^-$  meson moves at a high speed in the No-Shape-Substance Space, the inertial mass of each mass unit composing the  $\mu^-$  meson increases to be  $g(v)$  times as much as the inertial mass of each mass unit of an immobile  $\mu^-$  meson. Because the



vibration momentum of each mass unit doesn't change, the relative velocity of each mass unit decreases to be  $g(v)$  times as little as the relative speed of each mass unit of an immobile  $\mu^-$  meson. Therefore the time interval of collisions among the mass units of a  $\mu^-$  meson extends to be  $g(v)$  times of the original value, and accordingly the life span of the  $\mu^-$  meson extends to be  $g(v)$  times of its original value. We can express it by the following equation:

$$\tau = g_{(v)}\tau_0 = \frac{\tau_0}{\sqrt{1 - \frac{v^2}{c^2}}} \quad (1.15)$$

Where  $\tau$  is the life span of a moving  $\mu^-$  meson and  $\tau_0$  is that of an immobile  $\mu^-$  meson.

——We can comprehend reason of the prolongation of the life-span of a moving particle.

**Time is objective and absolute, and it is the foundation for us to understand the nature.**

**The prolongation of the life-span of a moving particle is not the time dilation. It is because that when the particle moves at a high speed to the total No-Shape-Substance–Space where it is, the reaction of itself becomes slower correspondingly.**

**Friends. We must admit the objectivity of time. This is the problem on the physical essential standard. Does the clock's slowness or rapidness represent the difference of the time standard completely?**

**Here I give a plain example. Putting a clock into water, and then the clock become slow. Can we say that the time in the water is becoming slow? Of course can't.**

**Time is the most essential and objective existence in the universe, or we say that time is the representation of the total existence and movement of the whole universe.**

**Time is our global measurement to the existence and movement of the universe. It is sure that this measurement is described by the time system standard on the earth surface that is familiar to us.**

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