What is time,the paradox of special relativity

Zhang yiyang（张翌阳）
Email: xiaolongxia0010@163.com

ORCID:0000-0002-2226-1530

Abstract:This article combined relative spacetime concept and absolute spacetime concept.This article take time dilation is a real effect as the precondition,demonstrated the contradiction between time dilation and constacncy of speed of light and the contradiction between time dilation and limit of speed.

Variation is the nature of time. Time is relative and also absolute.If all the atoms of an object change slowly, then the time of the object will slow down. Similar to all happened things on earth like a movie ,when the movie is played in a speed of 0.5 times, the time on the earth will slow down by half. If all the particles of a person change slower with a same times,then the time of the person will slow down,if all the particles of a person change faster with a same times,then in other peple's observation this person's time is speed up.If all particles on earth except a person,changing speed more faster,then the person will "time travel to the future".If all the particles' state except a person,become the same state as the past time,then this person will "time travel to the past".My definition of time is that everyone has their own "time".We are living in the same space, so the universe has a uniform time, that is, one second is defined as the duration of 9,192,631,770 cycles of radiation corresponding to the transition between the two hypersonic energy orders in the ground state of the undisturbed cesium-133 atom.

According to Einstein's theory of special relativity,if an observer on the ground observes a high speed spacecraft ,the phenomenon he observes is that the time of the spacecraft is slow down,if there is a light beam in the spacecraft ,the time of the light beam will also slow down,the time of the light beam slow down reflected in the speed of the light beam slows down.Assuming a high speed spacecraft with enough area,the spacecraft perpendicular to the ground,there is an observer in the spacecraft,the observer opens light source and make the light beam parallel to the ground,then the observer that on the ground will see the speed of the light beam is less than c,otherwise after the spacecraft back to the ground,couldn't explain the position of the light beam. According to Einstein's theory of special relativity,after a high speed traveller back to the ground,he will find that the people on the ground spent more time than himself,so during the journey, if he observes the ground, the observed phenomenon is that the time on the ground become faster, that is, the changing speed of all particles on the ground become faster.It means in the observer's view,the changing speed of all particles are faster than the changing speed of these particles that in the observation of people on the ground.If the changes on the ground become faster, the speed of light on the ground observed by the person in the spacecraft will also become faster. This is conflict with Einstein's theory that the speed of light is constant. If the light speed of ground that measured by the observer in the spacecraft is c,then couldn't interpret after the observer back to the ground what position the light beam that perpendicular to the spacecraft is.If time dilation is a real effect, then the velocity of objects on the ground that measured by the observer in the spacecraft is $v_2 = \frac{s}{t} = \frac{v_1 t_1}{t_2}$, v_1 is the speed of objects that

measured by the observer on the ground, t_1 is the time that clocks on the ground indicated, t_2 is the time that the clock in high speed spacecraft indicated.

$$\begin{cases} \frac{l}{t_1} = \mathbf{v} \\ \frac{l\sqrt{1-\frac{v^2}{c^2}}}{t_2} = \mathbf{v} \\ \frac{\frac{l}{v}v_1}{\frac{l\sqrt{1-\frac{v^2}{c^2}}}{v}} = v_2 \end{cases} \Rightarrow \quad v_2=\frac{v_1}{\sqrt{1-\frac{v^2}{c^2}}}$$ (l is the distance that high speed spacecraft moved,v is the speed of high speed spacecraft)

If the speed of objects that measured by the observer on the ground is equal to the speed of objects that measured by the observer in spacecraft ,after the observer in the high speed spacecraft back to the ground,the observer couldn't see the ground is "future state".Assuming 3 seconds on the ground is equal to 1 second in spacecraft because of time dilation, then when the clock pointer on the ground moving to 3 seconds the clock in high speed spacecraft indicate 1second. In high speed observer's view ,the moving speed of clocks that on the ground are faster than the moving speed of the clock that in spacecraft.The moving speed of objects on the ground that measured by the observer in spacecraft is faster than the moving speed of objects on the ground that measured by the observer on the ground,then after the observer in spacecraft back to the ground and see the ground is"future".According to Einstein's theory of time dilation,if an spacecraft in speed of infinitely close to light speed,what the observer in the spacecraft observed is the movement speed of objects absolutely faster than light speed. For example,an immortal people keep walking for several centuries,the observer in the spacecraft at speed of infinitely close to light speed will see the person moving faster than light,because in the theory of relativity,an observer who is in a speed of infinitely close light,in his observation one second,the time of ground maybe passed several centuries.What the observer in spacecraft at infinitely close to light speed observed is the changing process of ground of several centuries.What the observer see is the ground pasted several centuries in one second,the distance that the immortal people walked must longer than light distance in one second ,so if an observer in a speed of infinitely close to light speed,what he observed must faster than light speed, even if the observer looks clocks on the ground,in the observer's view the spinning speed of pointer of these clocks are faster than light, so the theory of relativity is logically contradictory.(Notes:The direction of high speed spacecraft is perpendicular to the ground,because it could avoid length contraction or velocity stacking or relativity of simultaneity.)

Experimental idea，control time: A person holds a laser sourse and turns it on, and then records the scene. After that, the speed of light is measured by playing the video at 2 times the speed

$s/t=v_1$

$v_2=s/0.5t$

$s/t=0.5v_2$

$v_2=2v_1$

Or

$v_1t_1/t_2=v_2$ If it is played at 2 times speed $t_2=0.5t_1$ $v_2=2v_1$
If it is played at 2 times speed, the speed of the light becomes 2c.

This experiment is for simulate in theory of relativity the scene of an obsever at infinitely close to light speed observing ground. This thought experiment is for make my perspective more visualized.

时间的本质，相对论悖论

张翌阳

摘要：本文时空观结合了相对时空观和绝对时空观，本文从时间的本质角度出发，以时间膨胀是真实效应为前提，论证了时间膨胀与光速不变的矛盾和时间膨胀与光速极限的矛盾。

时间的本质是变化。时间是相对的也是绝对的。如果一个物体的所有原子变化都变慢，那这个物体的时间就会变慢。这就好比地球上发生的事情是一场电影，如果以 0.5 倍速播放，那地球的时间就会变慢一半。如果一个人身上的所有粒子变化都等倍速变慢，那么他的时间就会变慢。如果一个人身上的所有粒子的变化都等倍速变快，那么在别人眼中他的时间就是变快的。如果地球上除了一个人，其他物体的变化速度都等倍速变快了，那么这个人就“穿越到了未来”。如果地球上除了一个人，其他的所有粒子都变成了过去的某一状态，那么这个人就“回到了过去”。我对时间的定义是每个人都有属于自己的“时间”，我们生活在同一空间内，所以世界规定了统一时间(宇宙时)，也就是以铯未受干扰的铯-133 的原子基态两个超精细能阶间跃迁对应辐射的 9,192,631,770 个周期的持续时间为 1 秒。我们用一个世界统一的时间量来表示一个物体存在过的时长，比如说一个人的年龄就是一个时间量。

根据相对论中的时间膨胀效应，地面的人观测宇宙飞船上的时间是变慢的，那么地面上的人观测宇宙飞船上平行于地面的光束的时间也是变慢的，光束的时间变慢体现在它的变化变慢也就是速度变慢，所以地面上的观测者观测到的这束光的速度也会变慢。假设一个面积足够大的宇宙飞船垂直于地面高速运动，宇宙飞船上有一个观测者，这个观测者打开光源，使光平行于地面，那么地面的观测者测量这束光的速度就是变慢的，否则宇宙飞船回到地面后无法解释这束光传播到哪个位置了。根据时间膨胀效应，一个高速飞行的人回到地面之后发现地面上过的时间比自己的时间长。那么在飞行过程中他观测到的现象必然有地面上的时间变快这个过程，也就是观测到的地面上的变化变快，如果地面上的变化变快，宇宙飞船中的观察者观察到的地面上的与宇宙飞船运动方向垂直的光的速度也会变快。这与相对论中的光速不变相互冲突。若宇宙飞船中的观察者测量到的地面上的与宇宙飞船运动方向垂直的光的速度也是 c，那就无法解释宇宙飞船中的观察者回到地面后那束光传播到什么位置了。如果飞船上的观测者观测到的地面时间一直是变慢的，也就是飞船上观测到的地面物体运动速度比地面观测者观测到的地面物体运动速度慢，那么飞船上的人回到地面，地面就不会是未来状态。若时间膨胀效应是真实效应，宇宙飞船中的观测者观测到的地面时间一直是变快的，那么宇宙飞船中的观察者测量到的地面物体运动速度(地面运动物体相对于宇宙飞船参考系的速度)满足$v_2=\frac{s}{t}=\frac{v_1t_1}{t_2}$，其中 v_1 为地面静止观察者测量到的地面运动物体的速度，t_1 为地面的表显示的时间，t_2 为高速宇宙飞船中的表显示的时间。

$$\begin{cases} \frac{l}{t_1} = \mathbf{v} \\ \frac{l\sqrt{1-\frac{v^2}{c^2}}}{t_2} = \mathbf{v} \\ \frac{\frac{l}{v}v_1}{\frac{l\sqrt{1-\frac{v^2}{c^2}}}{v}} = v_2 \end{cases} \Rightarrow \quad v_2=\frac{v_1}{\sqrt{1-\frac{v^2}{c^2}}}$$ （l 为高速宇宙飞船走的距离，v 是高速宇宙飞船的速度）

若地面观察者观察到的地面物体运动速度等于高速宇宙飞船上的观察者观察到的地面物体运动速度 ，那高速宇宙飞船中的观察者回到地面之后看到的不会是地面的“未来”状态。假设由于时间膨胀效应，地面上的表走到 3 秒时高速宇宙飞船上的表显示的是 1 秒。在高速宇宙飞船中的观察者视角，地面上的表的转速要比宇宙飞船中的表的转速快。只有这样才会有高速宇宙飞船上面过了 1 秒地面上过了 3 秒，才能满足宇宙飞船上的人回来之后地面已经变成了未来的情景，才能满足时间膨胀效应。根据时间膨胀效应，假设地面上的一个永生的人以正常速度一直走，一个无限接近光速的宇宙飞船中的观察者观察到的这个人的速度一定是超光速的。因为在相对论中，无限接近光速的观察者眼中一秒钟地面上可能已经过去了几个世纪，这几个世纪这个人走的距离肯定大于光一秒走的距离。宇宙飞船中的观察者一秒钟观察到的是地面上几个世纪的变化。所以在相对论中无限接近光速的人观察地面的运动必然是绝对超光速的，即使是观察地面上的表，表的转速也是超光速的，所以相对论是逻辑不自洽的。（说明：高速宇宙飞船的运动方向和地面的方向是垂直的，因为这样可以避免尺缩效应和同时的相对性带来的影响）

实验思路，控制时间：一个人拿着手电筒把手电筒打开，然后把这个画面录下来。以 2 倍速播放测一下光速。若播放速度为 2 倍速，则实际播放所需时间为原速播放时间的 1/2。

$s/t=v_1$

$v_2=s/0.5t$

$s/t=0.5v_2$

$v_2=2v_1$

如果以 2 倍速播放，这束光的速度就变成了 2 倍的光速。

或者$v_1t_1/t_2=v_2$　当 2 倍速播放时$t_2=0.5t_1$　$v_2=2v_1$

此实验为了模拟相对论中高速运动的宇宙飞船中的观察者观察地面的场景，此思想实验的目的是为了更为形象地表达我的观点。