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THE FIFTH DIMENSION EQUATIONS

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Abstract

In this presentation, we would like to show what happens when we add a new dimension to equation of the Lorentz (see [1]), and found that the conclusions that there are several cases including those that could help resolve the dispute if there is a movement of the particles faster than the speed of light.

We think that we must agree if there is the possibility of the existence of particles that move faster than the speed of light, we have to be prepared for how to deal with this matter.

0. Introduction

The theory of the fifth dimension is not a new innovation. In 1927, Kaluza-Klein (see [2]) for his theory, thus there were many scientists who have tried to build theories to solve new problems in modern physics and cosmology, and although it gave answers to some questions that came after the Big Bang Theory. These theories, however, did not answer when the probability that the particle can move faster than the speed of light or what is the speed of Big Bang?

1. Fifth Dimension Proven

According to the foundations established by Lorentz, the fourth dimension transformation equation is:

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The differential of the fourth dimension over the differential of time is given by

$$\frac{dT}{dt} = \sqrt{1 - \frac{v^2}{c^2}}, \tag{1}$$

where v is speed of particle, c is speed of light, T is fourth dimension and t is time.

This is applied to the supposition that the fastest speed will be the speed of light. The quantity under the square root in equation (1) will be positive when v is less than c. How can we explain what happens? When the observer changes with the speed of light or with a faster than speed of light?

According to the fifth dimension and with the same basic in Lorentz transformation equation to prove the four dimensions and adding my assumption to the fifth dimension $=$ **INV,** where **I** is $\sqrt{-1}$, ***N*** is time and ***V*** is velocity (the fifth dimension).

1. In the case where the compensation of the fifth dimension is by a real value and the distance is a real value or the compensation of the fifth dimension is by imaginary value and the distance is imaginary value, the equation of transformation then becomes:

The differential of the pure dimension / the differential of time $=$ Speed of light. (2)

The transformation equation for fifth dimension Case 1,

$$X_1 = X, \quad X_2 = Y, \quad X_3 = Z, \quad X_4 = iCT, \quad X_5 = iNV,$$

[where V is velocity as fifth dimension, N is constant time] $i = \sqrt{-1}$ and T is time,

$$dS^2 = dX^2 + dY^2 + dZ^2 - C^2dT^2 - N^2dV^2,$$

it follows that

$$-dS^2 = C^2dT^2 + N^2dV^2 - dR^2,$$

since $S = iNV$, we obtain that $dS^2 = -N^2dV^2$ and that

$$N^2dV^2 = C^2dT^2 + N^2dV^2 - dR^2.$$

Consequently, we obtain

$$C^2 = \frac{dR^2}{dT^2} = v^2,$$

we conclude that $C = v$, where C is speed of light and v is speed of a particle.

2. In the case where the compensation of the fifth dimension is by a real value and the distance is imaginary, the equation of transformation then becomes:

The differential of the fifth dimension over the differential of time is given by

$$\frac{dV}{dt} = K\sqrt{1 - \frac{v^2}{c^2}}, \tag{3}$$

where $(K) \in \{1 : 4.14 \times 10^{-13}\}$.

The transformation equation for fifth dimension Case 2:

$$X_1 = X, \quad X_2 = Y, \quad X_3 = Z, \quad X_4 = iCT, \quad X_5 = NV,$$

[where V is velocity as fifth dimension, N is constant time] $i = \sqrt{-1}$ and T is time,

$$S^2 = X^2 + Y^2 + Z^2 - C^2T^2 + N^2V^2,$$

$$dS^2 = dX^2 + dY^2 + dZ^2 - C^2dT^2 + N^2dV^2,$$

it follows that

$$-dS^2 = C^2dT^2 - N^2dV^2 - dR^2,$$

since $S = iNV$, we obtain

$$dS^2 = -N^2dV^2,$$

$$N^2dV^2 = C^2dT^2 - N^2dV^2 - dR^2,$$

then

$$2N^2dV^2 = C^2dT^2 - dR^2.$$

Consequently

$$dV^2 = \frac{C^2 dT^2 - dR^2}{2N^2},$$

$$\frac{dV^2}{dT^2} = \frac{C^3 dT^2 - dR^2}{2N^2 dT^2}$$

$$= \frac{C^2}{2N^2} - \frac{dR^2}{2N^2 dT^2},$$

standard evaluations give

$$\frac{dV^2}{dT^2} = \frac{C^2}{2N^2}\left[1 - \frac{dR^2}{C^2 dT^2}\right],$$

$$\frac{dV^2}{dT^2} = K^2\left[1 - \frac{v^2}{C^2}\right], \quad \text{where} \quad K = 1 = \frac{C}{\sqrt{2}N},$$

v is the speed of a particle. Consequently,

$$\frac{dV}{dT} = K\sqrt{1 - \frac{v^2}{C^2}} \xrightarrow{propervelocity}$$

when $\rightarrow K = 1,$

$$1 = \frac{C}{\sqrt{2}N}.$$

3. In the case where the compensation of the fifth dimension is by an imaginary value and the distance is real, the equation of transformation then becomes:

The differential of the fifth dimension over the differential of time is given by

$$\frac{dV}{dT} = K\sqrt{\frac{v^2}{C^2} - 1}. \tag{4}$$

The transformation equation for fifth dimension Case 3:

$$X_1 = X, \quad X_2 = Y, \quad X_3 = Z, \quad X_4 = iCT, \quad X_5 = iNV,$$

[where V is velocity as fifth dimension, N is constant time] $i = \sqrt{-1}$ and T is time,

$$S^2 = X^2 + Y^2 + Z^2 - C^2T^2 + N^2V^2,$$

$$dS^2 = dX^2 + dY^2 + dZ^2 - C^2dT^2 - N^2dV^2,$$

it follows that

$$-dS^2 = C^2dT^2 + N^2dV^2 - dR^2,$$

since $S = NV$, we obtain that

$$dS^2 = N^2dV^2$$

and that

$$-N^2dV^2 = C^2dT^2 + N^2dV^2 - dR^2,$$

then

$$-2N^2dV^2 = C^2dT^2 - dR^2.$$

Consequently

$$dV^2 = \frac{dR^2 - C^2dT^2}{2N^2},$$

$$\frac{dV^2}{dT^2} = \frac{dR^2 - C^2dT^2}{2N^2dT^2}$$

$$= \frac{dR^2}{2N^2dT^2} - \frac{C^2}{2N^2}.$$

Standard evaluations give

$$\frac{dV^2}{dT^2} = \frac{C^2}{2N^2}\left[\frac{dR^2}{C^2dT^2} - 1\right],$$

$$\frac{dV^2}{dT^2} = K^2\left[\frac{v^2}{C^2} - 1\right].$$

Consequently

$$\frac{dV}{dT} = K\sqrt{\frac{v^2}{C^2} - 1}.$$

Equation (4) is positive when v is greater than C, in case faster speeds than light.

The right idea in the situation is if we consider relativity as a special case inside the general case as fifth dimension theory.

2. Conclusion

• Equation (3), it can solve the problems of particles in speed under speed of light C.

• Equation (4), it can solve the problems of particles in speed up than speed of light C.

References

[1] A. Einstein, Relativity: The Special and General Theory, Chapter 17, Bartleby, 1920.

[2] Kaluza Klein, 5th-dimension,
http://en.wikipedia.org/wiki/Kaluza-Klein theory