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PHYSICS

Describing Relativistic Motion without using Theory of Relativity

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ABSTRACT

At speeds close to the speed of light, remarkable events take place which are explained by the Mr. Einstein's Theory of Relativity. Among these phenomenon is the dilation of time – wherein time slows down so that the cosmic speed barrier is not broken. I have tried to explain it in a refreshingly new way. Assuming our universe to be an undisturbed system, time can be defined in terms of entropy i.e. by specifying the spatial positions of atoms and their rate of change, we can also specify time. My theory postulates that space-time is a single inseparable entity unique for a given situation, so describing one of its components automatically describes the other component.

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INTRODUCTION

Fundamentally, since entropy of any undisturbed system depends on time, it can be said that entropy is a function of time and vice-verse. Assuming our universe to be an undisturbed system, time can be defined in terms of entropy i.e. by specifying the spatial positions of atoms and their rate of change, we can also specify time. My theory postulates that space-time is a single inseparable entity unique for a given situation, so describing one of its components automatically describes the other component. This is better understood if we follow a definitive scientific method to calculate dilated time.

A METHOD TO CALCULATE THE NUMERIC VALUE OF DILATED TIME

Consider a given situation in which you wish to present an accurate description of motion at relativistic speeds. We know that time is a function of entropy. Thus, difference of two times (measured from the start of the motion) will be a function of difference of entropies calculated in a similar way. Clearly, we will be able to calculate the time dilation (Difference between normal expected time and observed dilated time) by simply computing the difference in entropies and their dependence on time. So, once we express the expected and the allowed entropy as a mathematical formula (using Boltzmann's formula for entropy) and enter the values, the difference between the corresponding answers will give us the difference between the times we want to calculate (time dilation). Using the formula gives us the absolute value of time. This calculated absolute time can be used to accurately explain motion.

THE SPACE-TIME EQUATION

$$Entropy(expected) - Entropy(allowed)$$

$$= |f(Time[expected] - Time[allowed])|$$

i.e. $$\int ds = \int |f(dt)|$$

1. **ds** is the difference between excepted and allowed entropy under some boundary conditions .
2. **dt** is the numeric value of time dilation that occurs in these boundary conditions
3. f is the function of entropy in terms of time
4. f has to contain some constants to ensure that the equation is dimensionally correct.
5. Modulus ensures that the equation is mathematically consistent as we do not know the exact function of entropy in terms of time.
6. If the function is non-uniform, we will have to integrate this expression.
7. If the function is uniform, we can use the first formula to express motion.

EXAMPLE

Imagine that you start running at a speed “x+y” in a train traveling at speed “c-x”(C is speed of light; x,y<<c). So the expected entropy will correspond to speed “c+y” but since speed cannot exceed c; the allowed entropy corresponds to speed c. Thus entropy observed is less than the entropy that would have been observed normally if there wouldn’t have been any restriction on it.

By using Boltzmann’s formula for calculation of entropy, we will find the entropy that corresponds to speeds “c” and “c+y”. Then we will use the function of entropy and time to find the corresponding times. The difference in these times will be the dilated time and will be found by computing the difference between the unrestricted entropy and the restricted entropy.

The time difference thus calculated can be used in general equations of physics and all components of motion can be described after taking a convenient reference point. The time difference (dilation) can be called Absolute time if we take time=0 at the start of motion.

Summary

Thus we will have to take the following steps to describe motion under restricted boundary conditions –

1. Set time=0 and origin at the instant and place motion starts.
2. Find the function of entropy with time.
3. Calculate the difference of entropy with and without restrictive conditions.
4. Find the corresponding difference of times in the given situation using the function of entropy and time found in step 2.
5. Compute the difference between these times (called absolute time).
6. Use this absolute time in general equations of physics.
7. Accurately describe motion under given conditions.