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Research Article

THE REALM OF PHYSICS SPACE-TIME CREATION

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Abstract

In the realm of physics, Minkowski space [1] (or Minkowski spacetime) stands as the principal mathematical framework for describing spacetime in the absence of gravitational forces. It unites inertial space and time manifolds into a comprehensive dimensional model. The model is instrumental in illustrating that the spacetime interval between any two events remains unaffected by the inertial frame of reference in which they are observed. In this research paper, we will reveal the Minkowski concept and refine the idea concept by adding extra momentum to it. This will be influenced by the work in superposition consequence of applying the Lorentz transformation concept, which this paper will describe as "grown on thesuperposition of spacetime concept in the formation of extra dimension grounds."

Keywords: Minkowski space, Space-time creation, Einstein's theories, Euclidean space.

INTRODUCTION

Minkowski space, a key component in Einstein's theories of special and general relativity [2], serves as the primary mathematical structure for formalizing special relativity. Unlike the individual components in Euclidean space and time, which may vary due to length contraction and time dilation, Minkowski spacetime ensures that all frames of reference agree on the total interval in spacetime between events. This unique characteristic sets Minkowski space apart from four-dimensional Euclidean space, particularly in its distinct treatment of time compared to the three spatial dimensions.In 3-dimensional Euclidean space, the isometry group consists of maps that preserve the regular Euclidean distance. This group, known as the Euclidean group, is generated by rotations, reflections, and translations. When time is considered as a fourth dimension, additional transformations including translations in time and Lorentz boosts are added to form the Poincaré group. Minkowski's model is based on special relativity, where motion causes time dilation, leading to a change in the scale applied to the frame in motion and shifts the phase of light.This shift in place of light. It will be represented as the kind of energy shift instead of the matter (Mass) shift. Since many scientists believe that light doesn't carry material, they just carry energy. But energy consumption will depend on, by the way that travel will be deemed to be the way that expresses. Spacetime is described by an indefinite non-degenerate bilinear form known as the Minkowski metric. It's also referred to as Minkowski norm squared. In theory presents Lorentz transformations as rotations of a four-dimensional Euclidean sphere. This is achieved by representing time as an imaginary fourth spacetime coordinate (ICT) concept, where c is referred to speed of light and i is the imaginary unit. In this visualization, each point in the four-dimensional spacetime represents an event, and the Lorentz transformations correspond to rotations in this four-dimensional space. The axis of rotation represents the direction of relative motion in between two observers, and the angle of rotation is related to their relative velocity, providing a clear visual representation of this complex concept.

This research paper will utilize the concept of considering coordinates of an event in spacetime represented as a 3+1-vector (t, x, y,). During a Lorentz transformation, a matrix acts on the four-vector, changing its components. This may cause a shift, as the matrix can be supposed of as a rotation matrix in a four-dimensional space plus an extra dimension, which rotates the four-vector around a particular axis.

The coordinate space is constructed by (t, x, y, z) ↦ (x, y, z, it). The Lorentz transformation is ensured as an ordinary rotation transformation in the coordinate space.The consistency of the Lorentz transformation between two inertial systems remains unchanged. The formulas are expressed in the geometric unit system where c=1, ensuring that t shares the exact dimensions as x, y, and z. Poincaré's method is employed to normalize the speed of light c, resulting in the Lorentz transformation behaving as an ordinary rotation transformation in the coordinate space. Which will cause the negative spacetime change to positive space time structure. (-,+,+,+)
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By negative structure model (-)

Shift in positive,

x^2+y^2+z^2+t^2

The expression can make the previous one simpler to understand, but the meanings represented by 't' in the two formulas are different. The former represents the original time measured in the inertial system, while the latter represents the time coordinate. This difference can also be transform into Rotation, in determined by two space unit vectors is a usual rotation in both coordinate space and actual space-time. However, when determined by a time unit vector and a space unit vector, the 'rotation' is called Lorentz boost, and it is not similar to the Euclidean rotation. So, in this research paper we add up momentum P, as a denote as the compliment modification.

This research paper in line with Minkowski's concept of 3+1-dimensional space-time and its invariance before and after Lorentz transformation.We modify it into our new approach of assumption as a new perspective. Minkowski proposed that time and space should be treated equally, leading to the concept of events occurring in a unified space-time continuum. Theidea using real time coordinates and a 3+1-dimensional real vector space. In this space correspond to events in space-time&a light cone in this space-time. Points not on the light cone can be classified as "space-like" or "time-like" based on their relationship to the light cone. The text also mentions the use of time as a virtual coordinate in special relativity and quantum field theory, and the transformation between Minkowski space and 3+1-dimensional Euclidean space is called Wicker rotation.

In Minkowski's paper, he defined the Minkowski metric as the "line element." The Minkowski diagram is an essential tool used to demonstrate properties of Lorentz transformations. The mathematical structure of Minkowski space is obtained by the invariance of space-time intervals on the space-time manifold. This structure provides the background for all current relativistic theories except general relativity. For general relativity, Minkowski spacetime can still be used as the starting point for locally flat curved spacetime.Whether in coordinate space or in actual space-time, rotation in the plane determined by two space unit vectors is rotation in the usual sense. But when that plane is determined by a time unit vector and a space unit vector, the "rotation" is called Lorentz ascent.

This research paper adds an extra concept of momentum; in applying to the real-time situation that perhaps will happen, this momentum event may lead to a superposition shift. When applying to the idea of spacetime event, the coordinates represented as a 3+1 vector (t, x, y, z)will change to a shift During a Lorentz transformation by the momentum, that makes up a pair up in the superposition, a matrix will act on the 3+1 vector, modifying its components. This modification might lead to a shift, considering the matrix as a rotation matrix in a 3+1dimensional space with anchange in shift dimension which create by momentum, which this momentum may lead to rotatesin the 3+1 vector around a specific axis, that may happen in a shift that eventually produce an extra dimension in the other open space.Special relativity guarantees this. Henri Poincaréexplored that when time is an imaginary coordinate ict (where c refers to the speed of light and i is the imaginary unit) combined with three actual coordinates representing space, it forms a 3+1-dimensional space-time. Laurent's transformation can be seen as a coordinate rotation in this space-time.

In the space which proposed, the coordinate space is constructed by (t, x, y, z) ↦ (x, y, z, it). The Lorentz transformation is ensured as an ordinary rotation transformation in the coordinate space.In this research paper, by modifying it into the concept of the shift of energy-momentum, the equation will be as follows:

$$\Delta\{p[X^2+Y^2+Z^2+(ict)^2]\}=\nabla\text{Energy constant to as close as 0.}$$

In simpler terms, a change in momentum can lead to a change in the position of an object, and this displacement is due to the momentum's weight. Similarly, the momentum of energy can be transformed into a shifting moment, providing a more significant explanation of this complex concept.

This caused by a change in momentum may induce a change in the superposition. In the scatter performance, the way of the path will hardly be measurable, but by the energy consumption, we can have a much sure of the possibility of the direction that hit the target or not. When the energy wave is consulted by consumed, it may be changed in the other format of position, whereas the actual moment. When the actual momentum change it can be measurable by the energy consumption of change, this kind of change in energy measurement, perhaps will be one of the solutions to solve the direction motion and position paradox, that is, the shift in energy may cause the shift in position change, when the momentum changes there may be a change in displacement. That is in the order of siri form.

It seems like the occurrence of one event might lead to another event through a series of circumstances. Through a specific event, it has become apparent that one type of energy can transform into another. These energy transformations could potentially lead to the creation of new forms, possibly resulting in the formation of new dimensions within the universe. The moment when the energy begins to move and then collapses might be a key moment in the creation of these new dimensions, captured within a specific time and space. It's possible that the momentum of energy waves could cause them to change direction, although determining this change in direction is quite challenging. However, by incorporating the concept of energy shift into the process of changing direction, we may find it possible to create new dimensions within the waves when energy experiences a shift.

In this research paper, we explore the concept of energy shifting and its potential implications. It is believed that when energy shifts, it may trigger extra-dimensional events. Upon measuring energy consumption, it may be observed that the energy has been utilised elsewhere. We propose that this energy consumption occurs in another dimension, leading to a superposition of energy in extra spatial dimensions that are not visible in our universe.

Wick rotation is a method of discovery a solution to a problem in Minkowski space in Euclidean space. This involves substituting an imaginary-number variable for a real-number variable. Wick rotations establish an analogy between statistical mechanics and quantum mechanics. In this analogy, inverse temperature in statistical mechanics is akin to imaginary time in quantum mechanics, where "t" is time and "i" is the imaginary unit (i^2 = -1).

In statistical mechanics, the Gibbs measure $\exp(-H/kBT)$ represents the system's relative probability of being in any given state at temperature T. In quantum mechanics, the transformation $\exp(-itH/\hbar)$ describes time evolution, where H is an operator representing the energy (the Hamiltonian) and ħ is the reduced Planck constant. The two expressions resemble each other when we replace $it/\hbar$ with $1/kBT$, known as Wick rotation. This rotation is called so because multiplying a complex number by the imaginary unit is equivalent to the counterclockwise rotation of the representing vector by an angle of $\pi/2$ about the origin. This research paper assumes that, in utilizing the magnitude (as an energy change) concept of idea, this concept can show the possibility of potential in the growing universe in superposition. Therefore, we use Δ denotes as change as well as magnetic (wave of energy) shift.

Wick rotation is based on the idea that the Minkowski metric in natural units (denoted by the convention (-, +, +, +)) and the four-dimensional Euclidean metric are equivalent if the coordinate t is allowed to take on imaginary values. The Minkowski metric transforms into the Euclidean metric when t is confined to the imaginary axis, and vice versa. By replacing t with -iτ in a problem expressed in Minkowski space with coordinates x, y, z, t, we can sometimes convert it into a problem in real Euclidean coordinates x, y, z, τ, which may be easier to solve. This solution can then be transformed back using the reverse substitution, yielding a solution to the original problem. In this research paper, we will utilize the rotate spin of transformation idea as a denote of negative sign change to a shift of the positive side of spacetime by adding a momentum concept(-,+,+,+)(it,z,y,x).

Wick rotation in metric sign of negative:

Ds^2=-(dt^2)+dx^2+dy^2+dz^2

As wick rotation, the negative sign will be wiped off:

Ds^2=dr^2+dx^2+dy^2+dz^2

In our research paper modify the approach by adding the change in momentum shift pi:

Δ[Ds^2]pi=∇[dr^2+dx^2+dy^2+dz^2]pi

While by simplifying the situation above, we use L transformation with imaginative spacetime to express this exponential event (L.i.e):

Δ[Ds^2]L.i.
exponential=∇[dr^2+dx^2+dy^2+dz^2]L.i.exponential
Δ[Ds^2]L.i.e>=∇[dr^2+dx^2+dy^2+dz^2]L.i.>lsp

The concept of this research paperis to utilize the Wick rotation concept as an idea to connect statistical mechanics to quantum mechanics by replacing inverse temperature with imaginary time, which causes a change in shift situation. This substitution allows for the calculation of probabilities and expected values in quantum systems at thermal equilibrium.

In the context of energy eigenstates, it enables the calculation of probability amplitudes for a uniform superposition of states. So, in applying the wick concept asa modifying approach to our research paper, the assumption of change in shift of energy that creates extra time^space concept is a feasible way to express the extra dimensionsiri. As our research paper stated, the superposition is just a constantly separate concept in both different dimensions as a state of idea, the idea that A & B can be sustainable, but in a separate spacetime (of extra dimension). When A diminishes, B will grow. So, in some stage of period, A & B will still be together (short run), with the quantum magnetic entanglement connected, but by time, they also obey the law of energy conservation. Other than just the energy shift, while when the energy shifts it may cause in the casualty of an extra dimension event that may happen when measuring the energy consumption, you may discover that the energy may have been consumed, but where have the energy go in the experiment, some may say it has derived a new form of particle, in this research paper, we believed that, the energy go by, due to the consumption in the other place of position, that superposition may happen in the extra dimension of space which the collision experiment accidentally create. That this extra dimension may not be seen in our universe dimension. But in the atoms collusion theory of hypothesis, it may be thought that when one atom collapses, then another will form. That may explain why the energy was less counted by the collision after.

In conclusion, this research paper explores and enriches the Minkowski concept by integrating additional momentum. In the influenced by the work in superposition and the implications of applying the Lorentz transformation concept. This paper denotes ‘L.i.e’ as a transformation we call it “Lie transformation” and “l” as a superposition arising from the spacetime concepts in the formation of extra dimensions.

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