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# Constrained Relativity (CORE): No Special Relativity Required
## (The Rail of Light is Fixed in a Medium; Observers Cannot Derail Light)
## (Einstein Derailed the Light; Universe Has No Speed Limit)

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***Abstract***–The light we see is relative. What we see as light is not the propagation of electromagnetic waves. We cannot see the propagation of electromagnetic waves. What we see as light is the motion of light bursts. The motion of light bursts that we see is relative. The propagation of electromagnetic waves that we cannot see is not relative.

Relativity of light is no different from relativity of a train since both the propagation of light and the motion of a train take place on tracks that are fixed in a medium, and whatever happens on the track is naturally independent of observers. Relativity must abide by all the natural constraints of the motion and propagation, not just the speed constraint. Relativity must work the same for all motions as well as the propagation of light seamlessly irrespective of whether observers are moving at constant speed or at an acceleration at any given time. The state of an entity on a fixed track is not relative since a fixed-track entity has no off the track existence relative to observers.

Observers cannot derail a train. Observers cannot derail light. Propagation of light has no existence off its track just as a moving train has no existence off its track. Relativity must keep not just the speed of light fixed, but also the direction and the path of light fixed. Special Relativity keeps the speed of light fixed by derailing light relative to observers, which is prohibited. Direction and path of light must be fixed relative to observers just as the speed of light is fixed in the vacuum or in a medium relative to observers.

Relativity cannot derail a train from its track since the train has no motion off its track. Relativity cannot derail the light from its track since light has no existence off its track. The constrains that no observer can alter the path of light, direction of light, and the speed of light must be the foundation of relativity, not just the speed constraint itself. Light does not propagate relative to observers. It is the path (the track) that moves unaltered relative to observers against the motion of observers while the direction and the speed of propagation of light on its track remain unaltered relative to observers.

If we define the train and its track as a single entity TrainTracklet, it is the TrainTracklet that is relative, not the train itself. If we define the light and its track as a single composite entity LighTracklet (light burst), it is the LighTracklets that are relative, not the propagation of light itself. Relative to a moving observer, the track itself moves unaltered against the direction of motion of the observer at the speed of the observer v while the LighTracklet is moving at the speed of light c on its fixed track independent of observer motion. LighTracklets do not move physically relative to observers just as a mountain does not move physically relative to a runner. No physical motion is involved in relativity. Relative motion of a LighTracklet is no different from the relative motion of a train, a steering-disabled armored combat vehicle, or a bulldozer. Their fixed tracks and whatever entities moving or propagating on them are unaffected relative to observers.

Lorentz and Einstein did not see that the path of light is fixed in a medium, and unknowingly derailed the light. In fact, it is the fixed path of light that keeps the speed of light observer independent. Light having a fixed speed on its track, a fixed direction, and a fixed track in the vacuum or in a medium is not a contradiction to the relativity. What is contradictory and unnatural is the forcing of a fixed speed on light by derailing the light in Special Relativity since light has no existence off its fixed track.

Light is off the track in Lorentz Transform, Special Relativity, and General Relativity, and hence light has no real existence in them. Light cannot be off its track relative to observers just as a moving train and a steering-free bulldozer cannot be off their tracks relative to observers. Observers cannot derail trains or light. Any activity on a fixed track in the vacuum that can only be altered by a medium is observer independent.

The existence of a fixed path of light in the vacuum and in a medium is both necessary and sufficient for the speed of light to be observer independent. When the path is fixed in the vacuum or in a medium, the speed of whatever entity on its fixed path is naturally observer independent. Speed of light cannot limit the speed of other entities. Energy of a mass has nothing do with speed of light unless the mass is travelling at the speed of light, which is indeed possible. There is no speed limit to the motion of a mass. A mass at rest in the vacuum has no kinetic energy. There is no speed limit in the universe. Mass and energy are not equivalent. Anything can travel faster than light. Time and mass are independent of speed and acceleration.

The claim that it is not possible to decide if a closed cabin is stationary or moving at constant speed from within the cabin is false and archaic. There is no theoretical impossibility. Difficulty is purely practical. Since propagation of light is not relative, it is possible for an observer inside a cabin not only to determine the state of motion of a closed cabin from within the cabin but also the speed of the cabin using a burst of light. The path of the light burst can also reveal if the cabin is accelerating.

What we see as light is the motion of light bursts, not the propagation of waves. Motion takes place relative to observers. Motion of light bursts is relative. Maxwell equations do not determine the relative motion of light bursts, and hence there is no speed restriction for the motion of light bursts. However, propagation of light takes place on its fixed track in the vacuum, the absolute frame, and affected only by a medium. Maxwell equations govern the propagation of light and hence the speed of propagation of light is fixed in the vacuum and in a medium. Propagation of light on its fixed tract is not relative. Anything that happens on a fixed track is independent of observers.

Light cannot propagate on observer's frame of reference. Maxwell equations do not apply on observers frames of reference. Maxwell equations cannot be transformed on to moving frames realistically and uniquely. Light bursts that we see move unaltered relative to us just like a mountain moves relative to us. Propagation of light on its fixed track is independent of our motion irrespective of whether we are moving at constant speed or at an acceleration. Laws of physics are independent of observers without Special and General Relativity.

***Keywords—****Propagation; Time; Relativity; Special; General; Lorentz; Galileo, Newton; Mass; Einstein; Maxwell, Light; Spacetime; Absolute; Light.*

## I. INTRODUCTION

Before getting into the regular introduction, here is the core of the CORE (Constrained Relativity) briefly. Regular introduction will follow the core properties of the CORE. If you want to know what CORE is without any reading, just turn to the self-explanatory figures.

Lemma:

The speed of light bursts is relative and depends on inertial or accelerating frames. The speed of propagation of light or electromagnetic waves is not relative and does not depend on inertial or accelerating frames. These two speeds are the same relative to the stationary frame, the vacuum.

Question: A train travels north on a linear path at speed c. An observer travels at speed v, which can be of any value, $-\infty<v<\infty$, in the direction,

a) To the east on a straight path,
b) To the north on a straight path,
c) To the south on a straight path,
d) In an arbitrary direction on a straight path,
e) In any direction at an acceleration 'a',
f) On a nonlinear path.

What is the speed and the direction of the train relative to the observer in each case at any time t? If the observer starts at rest at time t=0 and travels at acceleration 'a', what is the speed of the train relative to the observer in each case at time t?

Core Properties of the CORE:

1. The speed of the motion of light bursts that we see depends on the inertial frame, not a constant. Maxwell equations do not govern the motion of light bursts. The speed of motion of light bursts is not a constant.

2. Einstein's postulate that "*the speed of light is the same on all inertial frames*" is incorrect since the speed of light bursts that we see is not the same as the speed of propagation of light waves that we do not see unless we are stationary in the vacuum. It requires correct paraphrasing. The correct postulate should be that "*the speed of propagation of light or electromagnetic waves is the same in all inertial frames*". Maxwell equations govern the propagation of light waves and hence the speed of propagation of light waves is a constant.

3. A train does not move relative to observers. It is the train track that moves unaltered relative to observers just as a mountain moves relative to observers. Speed of a train on its track is observer independent. Speed of a train on its track is unaffected by the unaltered motion of its track relative to observers. There is no speed limit to the train on the track.

4. Both light track and rail track are fixed in a medium. The only difference between them is that a rail track is materially fixed in the medium and unaltered, while a light track is non-materially fixed in the vacuum and can only be altered by a medium.

5. A track of light moves unaltered relative to observers irrespective of the speed of light on its track in the same way a mountain moves relative to observers. Speed of light on its track is unaffected by the unaltered relative motion of the track relative to observers. The speed of light on its fixed track in the vacuum is the fixed c relative to any observer moving at any speed v, $-\infty<v<\infty$. There is no speed limit to the observer motion. The speed of an observer v can be greater than or equal to the speed of light, $v\geq c$ or less than the speed of light, $v<c$. There is no universal speed limit. Speed of any entity is independent of the speed of the propagation of light c. Speed of an object of mass has nothing to do with the speed of light. The kinetic energy E of a mass m is $E=(1/2)mc^2$ if and only if the mass is moving at speed c. A mass at rest relative to the vacuum has no kinetic energy. Speed of light cannot limit the speed of other entities. Speed of light is just speed of light, noting more to it. Speed of light cannot limit the speed of anything else.

6. Einstein's claim that "nothing can move faster than light" is false. Anything and everything can move faster than light. There no such speed limit in the universe.

7. Light has no existence off the track. Lorentz and Einstein blindly derailed the light in forcing the speed of light to be a constant, which is unnecessary since speed of light on its fixed track is naturally a constant relative to any observer. Light does not travel in the paths of the Lorentz Transform, Special Relativity, and General Relativity since the light in them is off the

track relative to observers. There is no propagation of light in the Lorentz Transform, Special Relativity, and General Relativity since light does not exist off the track. Off the track light is not real, hypothetical. Lorentz Transform, Special Relativity, and General Relativity are hypothetical, not real, imaginary.

8. Propagation of light takes place in the vacuum, which is the absolute frame of reference, and affected by the presence of a medium. Light bursts or LighTracklets move relative to observer's frame of reference. What we see as light is the motion of light bursts, not the propagating electromagnetic waves on its fixed track in the vacuum or in a medium. What is relative is light bursts that we see, not the propagating light waves we do not see.

9. Motion of light bursts (LighTracklets) are relative. Motion takes place in observers frame of reference. Propagation of light on its track take place in the vacuum and affected by a medium. Propagation of light on its fixed track is not relative.

10. The path light propagates is unique, not relative. The paths of light bursts that observers see are relative. Different observers see light bursts taking different paths depending on their motion. The path light propagates and the paths of light bursts that different observers see are the same only when observers are stationary in the vacuum.

"*A train or light cannot be off its track relative to observer*s. *A moving train has no existence off its track. Light has no existence off its track. Observers cannot derail light; it is naturally prohibited.*"

Galileo-Newton Relativity:

Galileo-Newton relativity only applies for free-moving objects. It does not apply for constrained motion. Galileo-Newton relativity has the ingrained assumption that the speed, direction, and the path of a moving object are not fixed in the vacuum or in a medium. Galileo-Newton relativity does not apply for the motion of a train where the path is fixed and for the propagation of light where the speed, the direction, and the path are fixed in the vacuum or in a medium. Galileo-Newton relativity does not apply relative to massless. Galileo-Newton relativity does not apply relative to light as a result $E \neq mc^2$, $m \neq E/c^2$.

Special and General Relativity:

In Special Relativity and General Relativity, Einstein was totally hypnotized by the constancy of speed of light in a vacuum or in a medium, he could not see that it is not just the speed of light that is fixed in the vacuum or in a medium, the direction and the path of light are also fixed. As a result, Einstein blindly derailed the light in Special Relativity and General Relativity. There is no real light on off the track paths in the Lorentz Transform, Special Relativity, and General Relativity.

Definition: A LighTracklet

Light comes in wave bursts of finite span on a fixed track in a fixed direction in the vacuum that can only be altered by a medium. Light burst of finite span on a fixed track including the track as a composite entity is a LighTracklet or a light burst. A LighTracklet is equivalent to a steering-disabled Caterpillar, armored combat vehicle, or a bulldozer except it is massless. A LighTracklet moves relative to observers as a single entity just as a Caterpillar moves relative to observers as a single entity irrespective of the speed of the Caterpillar on its fixed track. The speed of the Caterpillar on the track is independent of the motion of the observers. It is the Caterpillar track that moves relative to observers. The speed of the propagation of light on the track withing the LighTracklet is independent of observers. However, a LighTracklet has an additional velocity component relative to observers. For a stationary observer, the speed of LighTracklet is the same as the propagation of light on its fixed track. Relative to an observer in motion, speed of the LighTracklet depends on the speed of the observer.

Now that we have previewed the some of the properties of the Constrained Relativity (CORE) briefly, let us get back to the introduction. In the late nineteenth century, Maxwell formulated the now famous equations that bear his name, Maxwell equations for the propagation of electromagnetic waves and demonstrated that light consists of electromagnetic waves that travel at a constant speed determined by the vacuum and affected by a medium. The speed of light is determined by the vacuum and can only be altered by a medium. Although the direction and the path of light are determined by the source, they are fixed in the vacuum, and they can only be altered by a medium.

Lorentz conjectured that if the light propagates at constant speed determined by the vacuum, any observer should also measure the speed of light as a constant, and hence Maxwell equations should hold relative to any inertial frame. Lorentz tried to develop a transform that transforms the Maxwell equations onto a moving frame while retaining the structure of the Maxwell equations and the speed of light constant. However, his transformation led to a second order term, which he could not get rid of to retain the structure of the Maxwell equations.

At the same time, Einstein, thinking about a light burst on a train moving on a linear path at a constant speed, came up with a speed dependent factor that would eliminate the second order effect in Lorentz Transform and rectified the problem Lorentz had faced [1]. The outcome was the Lorentz-Einstein Transform that can transform Maxwell equations on to a frame moving at constant speed on a linear path or on to an inertial frame while maintaining the structure of the Maxwell equations. This transformation involves the hidden assumptions that the Lorentz-Einstein Transform is unique, the light propagates on moving frames relative to observers, there are such entities

called massless frames that move, light can be confined to a frame, and light propagates relative to any frame that has a mass or massless, all of which are all false.

Lorentz-Einstein Transform is designed to transform the propagating light waves on to a moving frame at constant speed along the path of light. This has the ingrained assumption that light propagates on moving frame relative to observers and light jumps from one frame to another relative to observer. The fact is that the relativity of light cannot be any different from the relativity of a train relative to an observer motion. Light has a fixed track for propagation in the vacuum or in a medium just as a train has a fixed track for its motion. Observer motion cannot alter the propagation of light on its fixed track or the motion of a train on its fixed track. Lorentz-Einstein Transform is also under several illusions that the time is relative, the time depends on the space, and observer motion can alter the physical characteristics such as mass and the dimension of an object, which are unreal. Relative speed cannot change the physical characteristics of an object. It is only the absolute speed that can change the physical characteristics of an object. There cannot be a relative speed without an absolute speed. The claim that “every motion is relative” is false since there cannot be a relative motion without an absolute motion.

For the Lorentz-Einstein Transform to be real, the Lorentz-Einstein Transform must be unique. A transform that is not unique cannot be a transform of nature. Lorentz-Einstein Transform is not unique. There are infinitely many Lorentz Transforms that are equally can do the job of transforming Maxwell equations for propagating light on to an inertial frame [2]. When there are infinitely many Lorentz Transforms for the job, there will be infinitely many relative times, infinitely many length contractions, infinitely many mass dilations, infinitely many spacetime functions, and an infinite of whatever that is there in Lorentz Transform. If the propagation of light is dependent on the frame of reference, the relative time will be directional. Time cannot be directional. Time must be unique.

There are moving objects of mass. There are no such entities called moving massless frames. Massless cannot move. Massless frames are purely hypothetical, non-existent. Any moving frame must be a moving mass. Observers have no freedom to transfer light physically to any frame observers want. Light is not bound to moving frame. Light never enters a moving frame or exists a moving frame, light propagates in the vacuum. Observers cannot make light propagates relative to moving frames. We cannot see the propagating electromagnetic waves. Light does not know moving frames or moving objects exist. It is not observers who determine where light goes.

Light does not propagate on moving frames. Light does not leave one moving frame and enter another moving frame relative to observers. Light does not sense the presence of a moving frame. Light does not jump from moving frame to moving frame or a medium to medium. Light propagates in the vacuum, the absolute frame, the stationary frame. The impression that the light bursts or LighTracklets move relative to the observers is as unreal as the motion of a mountain relative to an observer is unreal. Light does not propagate on paths moving observers see. An actual path light takes does not change relative to observers since the path is fixed in the medium. The propagation of light is affected by a medium, not determined by a medium [5].

Observers cannot determine where light propagates. Light has a fixed path in the vacuum or in a medium. Light cannot change the path of propagation physically based on the observer motion since light does not know there are observers. Observers cannot change the actual path of propagation of light. Light does not propagate on the path observers see. What we see are the motion of light bursts, not the propagation of light. The paths of light we see are not the paths light propagates. The path light propagates is unique. The paths of light bursts that observers see are not unique, they depend on the observer motion. Different observers see different paths depending on their motion. The path of propagation of light is fixed in the vacuum or in a medium irrespective of the imaginary path of light bursts that observers see. Light does not propagate on the imaginary paths of light bursts observers see. The path of light burst we see are the relative path of light depending on our motion. It is the path of light that shifts (moves) unaltered relative to observers.

A light burst moves relative to observers while the propagation of light on its fixed path remain unaltered relative to observers. Observers cannot bend a train track that is fixed. That is the reality irrespective of relativity. The fact is that the light propagates on a fixed path in a fixed direction at a fixed speed in the vacuum and they can only be altered by a medium; observers cannot alter them. For moving observers, the path of light bursts (LighTracklets) appears to be moving relative to them unaltered while light is propagating on its fixed path.

Einstein developed the Special Relativity for inertial frames, and the General Relativity for accelerating frames, based on the Lorentz Transform. Special Relativity has one fatal assumption. It assumes that the direction of propagation depends on the frame of reference, and the direction of light bursts that the observers see is real. The path of light bursts observers see is as unreal as the path of a mountain moving relative to a runner. The problem with Special Relativity is that observers cannot change the direction of propagation just as the observers cannot change the speed of light; they are fixed in a medium. Observers are blind to the propagation of electromagnetic waves. Observers only see light bursts. Light bursts do not propagate, they move.

Light or electromagnetic waves in general cannot propagate relative to observer’s frame of reference. The direction of propagation of light cannot be dependent on the observer motion. The direction of the propagation of light is fixed in the vacuum or in a

medium just as the speed of light is fixed in the vacuum or in a medium. Both the speed of light and the track of light are fixed in the vacuum and can only be altered by a medium. However, Special Relativity got it right that the speed of propagation of light does not depend on the observer motion, although it went an unnecessary crusade to enforce it. Speed of light is naturally a constant on its fixed path. You do not have to force it to be a constant as Special Relativity did. Special Relativity fail to account for the fact that the path of light and the direction of light are fixed in a vacuum and in a medium. You cannot take the constancy of one factor in light and disregard the constancy of other factors in light; if you do, it leads to unrealistic bizarre outcomes as it did in Special Relativity.

If a light burst is released vertically from the bottom of a moving cabin at constant speed, light cannot change the direction and start propagating on an angular path relative to an observer on a stationary platform outside the cabin since the path is fixed in a medium. Light pulse cannot travel vertically straight up relative to an observer inside the cabin since light has no mass. Massless has no momentum. You cannot force a massless momentum on light by proclamation, as Special Relativity did, just because you want a vertically released light burst from the bottom of a moving cabin to move vertically so you can bring light into the motion mechanics of a masses to form a unified framework for light and objects of mass. It is not possible to bring propagation of light and motion of masses into a unified framework since they are two completely difference processes. Special Relativity has given light a fake momentum by proclamation to unify propagation of light and motion of masses, which is naturally impossible without that false proclamation.

If light has a momentum, light cannot propagate. Any entity with momentum cannot propagate. Any entity with momentum should be able to be brought to standstill by applying an equal and opposite momentum. Light has no standstill existence. Light cannot be brought to a standstill by applying an equal and opposite momentum. Light cannot carry a momentum. This is not possible. Yet, this is what Special Relativity is based on. Special Relativity gave light imaginary momentum. It is this imaginary momentum given to light in Special Relativity that led to bizarre Quantum Mechanics [3]. Special relativity gave light imaginary path that light has no real existence. Special Relativity derailed the light. Light does not propagate on the paths of light bursts moving observers see. Observers cannot bend a rail.

Light cannot change its direction of propagation relative to moving observers. Light propagates on a fixed track just as a train moves on a fixed track. Observers cannot bend a train track. Observers cannot derail a train by running away from it. An entity moving on a fixed track cannot be off the track. Light has no existence off the track just as a moving train has no existence off the track. Light is off track in the Lorentz-Einstein Transform. Light cannot be off the track relative to observers.

There is no off the track light. There is no real light on the paths of Lorentz Transform, Special Relativity, and General Relativity. Light on Lorentz Transform, Special Relativity, and General Relativity is imaginary. Lorentz Transform, Special Relativity, and General Relativity are hypothetical. It is this mistake, the use of hypothetical imaginary light paths, that led to the Lorentz Transform, Special Relativity, General Relativity with their associated spooky and bizarre outcomes. There cannot be one relativity such as Special Relativity dedicated only for inertial frames and another relativity such as General Relativity that is completely different from Special Relativity dedicated for accelerating frames. There should be one and only one Relativity in nature and that Relativity (The Relativity) should work at any time t irrespective of whether the objects are moving at constant speed or at an acceleration.

Relativity has nothing to do with gravity. Gravity has nothing to do with Relativity. Relativity has nothing to do with propagation of electromagnetic waves. Observers cannot see the propagation of electromagnetic waves. It is only the moving light bursts that observers see. Light bursts are not governed by Maxwell equations. Light has nothing to do with gravity. Massless has nothing to do with gravity. Gravity has no effect on light in the vacuum and vice versa. Gravity affect light only through a medium. If there are multiple relativity theories, one relativity theory, Special Relativity, for objects moving at constant speed, and another relativity theory, General Relativity, for objects moving at an acceleration, then, that itself is an indication that there is a fundamental conceptual failure in those theories.

Relativity should work the same irrespective of whether the object is moving at constant speed or at an acceleration. The principle of relativity should be the same whether it is a mountain moving relative to an observer, a train moving relative to an observer, a bulldozer moving relative to an observer, or a light burst moving relative to an observer. Relativity has nothing more to it than observer perception. There is no physical reality in relativity.

Time does not depend on observer motion. Length of an object does not depend on observer motion. Mass of an object does not depend on observer motion. Time cannot be directional. Unrealistic reciprocal time dilation, mass dilation, length contraction, spacetime are physically impossible, and not necessary for light to propagate at constant speed relative to an observer on an inertial or an accelerating frame. Observer motion cannot change the physical characteristics of an object and time. Observer motion cannot change the mass of an object. Observer motion cannot change the energy of another object. Observer motion cannot move a mountain. Observer motion cannot give another object energy. Propagation of light at speed c cannot give a rest mass m a rest energy relative to light, $E \neq mc^2$. A mass cannot move at speed c relative to light. Mass has no motion relative to light. Propagation of light is not relative. No object can move relative to an entity

that has no standstill existence such as light. Mass has no motion relative to the motion of massless.

Observer motion cannot derail a train. Observer motion cannot derail light. Observer motion cannot change the propagation characteristics of light. You cannot derail a train by running away from it. Your running does not change the motion of a train on its track. You cannot move a mountain by running away from it. You cannot change the direction, path, and the speed of propagation of light by running away from light. The path of light is fixed in the vacuum and in a medium and it is independent of observer motion just as the speed of light is independent of the observer motion.

Relativity between light and moving objects are not reciprocal since light has no mass. A stationary or rest mass does not move at speed c relative to light. As a result, a rest mass m does not have rest kinetic energy $mc^2$ relative to light. The relationship $E=mc^2$ is a result of the false assumption that the propagation of light is relative, and the relativity between the propagation of light and a moving mass m is reciprocal; they are not reciprocal. Propagation of light and a moving mass are not relative. It is only that the LighTracklets or light bursts can move relative to observers. A mass cannot move relative to light. Relativity between light bursts and a moving mass is not reciprocal. Relativity is reciprocal only between moving masses, not between light and a moving mass. The hollow tactic Einstein used to bring propagation of light and the motion mechanics under a general framework is false. Propagation of light and the motion mechanics do not have a general framework; they are two distinct processes and they do not evolve from a common general principle.

If a train travels at speed c, the speed of the train relative to any moving observer at any speed v in any arbitrary direction remains the same speed c irrespective of the speed v of the observer, where v can be of any value $-\infty<v<\infty$. Here, the speed c is whatever the speed the train is travelling on the track. It does not have to be less than the speed of light. There is nothing preventing a train travelling on its track at the speed of light c or beyond the speed of light c. A train travels on its own track and the speed of the train is observer independent irrespective of the speed of the observer and irrespective of whether the observer is moving at constant speed or at an acceleration.

"*If an experiment is set up on a moving frame to measure the speed of propagation of light, the result of that experiment will be independent of the motion of the frame, observer independent.*"

*"If the experiment is set up on a moving frame to measure the speed of the motion of light bursts (LighTracklets), the result of the experiment will be dependent on the motion of the frame, observer dependent.*"

*"The results of the two experiments will be the same only if the frame the experiments are on is stationary relative to vacuum.*"

It is the track that moves unaltered relative to observers, not the train. The motion of light bursts relative to observers is an observer impression, not a real physical motion. Even though the track moves unaltered relative to observers, the train remains on the track travelling at whatever speed it has been travelling. Observer motion has no effect on the motion of the train on its track. Motion of a train is not relative. A train has no relative motion independent of the track relative to any observer. A train and its track as a composite single entity is a TRAINTRACKLET. It is this TrainTracklet that is relative, not the train itself.

A light burst and its track as a single composite entity is a LIGHTRACKLET. It is the LighTracklet that is relative, not the propagation of light itself. A LighTracklet has no motion independent of its fixed track. Propagation of light on its fixed track is unaffected by the motion of observers. The direction of propagation on its fixed track is unaffected by the motion of observers. The speed of propagation of light on its fixed track is unaffected by the motion of observers. Propagation of light is not relative. The motion of LighTracklets or light bursts is relative.

It is the fixed track of light that is relative. Light propagates on its fixed track unaffected by the motion of observers. A LighTracklet represents both the fixed track and the propagation of light on its fixed track as a single entity. Light propagates. A LighTracklet moves relative to observers just as a train, a steering disabled bulldozer, or a caterpillar moves relative to observers. LighTracklet moves at the speed of light c on its track relative to vacuum or relative to a stationary observer.

Motion is relative, propagation on its fixed track is not. Both the track of light and the speed of light are fixed in the vacuum and can only be altered by a medium, not by observers. The speed of light on the track is fixed, and it is unaffected by the relative motion of observers. Propagation of light on its fixed track is observer independent. Observers cannot see propagation of light waves. Observers only see the motion of light bursts. Observers cannot see propagation of electromagnetic waves.

It is the track that moves unaltered relative to an observer against the direction of the observer, not the light itself. Both Lorentz and Einstein derailed the light breaking the laws of nature. Relativity must take the physical constraint of the path into account. Light has no freedom to travel off its track. The speed of propagation, the direction of propagation, and the path of light are all fixed, observer independent. When there are no constrains, the Constrained Relativity (CORE) will become the Galilean-Newton Relativity. Relativity must work irrespective of whether the motion is an inertial motion or an accelerating motion. There must be only one Relativity for all the motions whether the motion is inertial or accelerating. No two

relativities such as Special Relativity and General Relativity are required or can be real.

"*Maxwell equations do not determine the relative motion of light bursts, and hence there is no speed restriction for the motion of light bursts*."

## II. **CONSTRAINED RELATIVITY (CORE)**

Axiom:

It is not just the speed of light that is fixed in a medium and hence must be observer independent, the direction of light and the path of light are fixed and hence they all must also be observer independent.

Definition: Stationary Object

An object that is at rest in the vacuum.

Property:

Any entity that moves or propagates on a track that is fixed in the vacuum or in a medium cannot be relative. It is the track that moves unaltered relative to moving observers carrying whatever on its track, just like a mountain moves relative to a runner.

Property:

A train and its track are a single entity; this single entity is a TrainTracklet or a light burst. It is this TrainTracklet that is relative. Propagating light and the path of light are a single entity; this single entity is a light burst or a LighTracklet. It is this LighTracklet that is relative. A LighTracklet moves relative to observers. The propagation of light on its fixed track is unaltered relative to observers. For a stationary observer or relative to vacuum, the speed of a LighTracklet is the same as the speed of propagation of light since there is no relative motion of the track. Speed of light on its track is observer independent just as speed of a train on its track is observer independent. Observers cannot alter the track of light. Observers cannot derail the light or a train.

CORE FUNDAMENTAL LAW:

Non-variability of the path of light relative to observers is more fundamental than the non-variability of speed of light relative to observers since the speed of light cannot be fixed in a medium without the path of light being fixed in a medium. Observers cannot alter the path, the direction, and the speed of light by any mean without changing the medium. When the path of light remains fixed relative to observers, the constancy of the speed of light relative to observers is automatically guaranteed. The fixed path of the propagation of light in the vacuum or in a medium is the primary importance, the constancy of the speed of light on that path is secondary.

Galileo-Newton relativity has the ingrained undeclared assumption that the speed, direction, and the path of an object are not fixed in the vacuum or in a medium. Moving objects in Galileo-Newton relativity has the freedom to move at any speed at any direction relative to an observer. This is possible since Galileo-Newton relativity refers to the objects of mass. In the case of an objects of mass, the speed, direction, and the path of the motion of an object are not fixed in the vacuum or in a medium. This is not the case for light. The speed and the path or the track of light are fixed in the vacuum or in a medium. In addition, the direction of light is fixed in a vacuum or in a medium. Light has a specific track that light must travel and a specific direction that light must follow. The speed of light on this track is fixed in the vacuum or in a medium.

So, the Galileo-Newton relativity does not apply for light. Lorentz Transform, Special Relativity, and General Relativity are not made for light due to their blatant disregard to the fixed direction and fixed path of light in the vacuum or in a medium. The constancy of the speed of light is necessary but not sufficient for relativity of light since the direction and the path of the light must be fixed. However, the fixed path of light is both necessary and sufficient for relativity of light, which Special Relativity and General Relativity failed to do. Special Relativity and General Relativity have gone against the fundamental principles of the propagation of light.

"*The fixed path of light in the vacuum or in a medium is both necessary and sufficient for relativity of light*."
"When the path is not relative, speed of any entity on the path is automatically not relative"

Lorentz proposed the Lorentz Transform to make the speed of light to be a constant relative to a moving observer by undermining the fact that the direction and the path of light must be fixed. Einstein make use of the Lorentz Transform and introduced the Special Relativity and the General Relativity to incorporate massless light into motion mechanics of objects of mass [1]. Both Lorentz and Einstein achieve these by derailing the light. They paid all the attention to the constancy of the propagation of light. They paid no attention to the fixed path and the fixed direction of light, the most important factors. They completely disregarded that the path and direction of light in a medium are fixed. In addition, motion mechanics do not apply for light, the massless. Propagation of light and motion of masses are two distinct mechanisms; they cannot be unified under the same framework. Propagation of light is not relative. Motion of light bursts (LighTracklets) is relative. The relativity between moving light bursts and moving masses is not reciprocal or symmetric.

Propagation of light cannot be treated in equal footing with the motion of masses. Light has no mass or a momentum. Motion mechanics do not apply for propagation of light. Motion mechanics only apply for objects of mass. It is this negligence that led to the bizarre concepts such as relative time, relative length, relative mass in Special Relativity and General Relativity.

Special Relativity only applies to inertial frames. The spacetime in Lorentz Transform, Special Relativity, and General Relativity are not unique [2].

An Object accelerating at acceleration 'g' and an object at rest on a gravitation 'g' are not the same. Einstein's equivalence principle is false. An observer in an accelerating cabin can determine if the cabin is at an acceleration or at rest on a gravitational object using a light burst since a horizontal light burst takes straight path in a cabin at rest on a gravitational object, and a curved path in a cabin moving at an acceleration. Lorentz Transform, Special Relativity, and General Relativity do not consider the true nature of light since they do not include the fact that the path and the direction of light are fixed in a vacuum or in a medium. Any entity that is fixed in a vacuum or in a medium cannot be altered by the relative motion of observers. Laws of nature cannot be based on observer illusions. Relativity of light is an observer illusion just as a relative motion of a train or a relative motion of a mountain are observer illusions.

Fallacy of Lorentz Transform, Special Relativity, and General Relativity:

Lorentz Transform altered the direction and the path of light that are fixed in a medium, which is naturally prohibited. Special Relativity altered the direction and the path of light that are fixed in a medium. General Relativity altered the direction and the path of light that are fixed in the medium. That is the fundamental fallacy of Lorentz Transform, Special Relativity and General Relativity. In addition, Lorentz Transform is also not unique [2]. There are infinitely many Lorentz Transforms that are equally valid. A Transform that is not unique cannot be a transform of nature. Nature has no mechanism for choosing one out of infinitely many equally valid transforms [2].

"*The speed of light must remain a constant relative to observers. The direction of light must remain fixed relative to observers. The path of light or the track must remain fixed relative to observers. Light cannot be derailed from its fixed path relative to observers. When the path of light is fixed relative to observers, the direction and the speed of light are automatically observer independent*."

Relative to an observer, light travels on a fixed path on a fixed direction at a fixed speed. It is the track or the path of light that moves unaltered relative to the motion of an observer, not the light itself. What we see as light is the moving light bursts of finite span or the propagation of light and its track as a one single compound entity, which is a LighTracklet. It is a light burst or more appropriately LighTracklet that moves unaltered against the motion of the observer relative to an observer. The propagation of light, the direction, the path, and the speed of light on its track remain unaltered relative to a moving observer just as a train remains unaltered on its track relative to moving observers although train track moves unaltered relative to moving observers.

"*Even if you run faster than light in any direction, light propagates at a fixed speed c in a fixed direction on its fixed track unaltered relative to you as long as medium remains unchanged*."

Light comes in wave burst or LighTracklets of finite span. Light wave within the LighTracklet propagates at the speed of light c on its track and hence a LighTracklet moves at the speed of light c along the direction of propagation on its track relative to a stationary observer. Relative to an observer in motion, a LighTracklet also has additional motion at the speed of the observer v against the direction of the observer while the LighTracklet is moving on its track at the speed of light c. The velocity of the LighTracklet relative to an observer moving at velocity **v** is given by **c**-**v**, where vector **c** is the velocity of the light. The speed of light bursts or LighTracklets is |**c**-**v**|. The speed of propagation of light on its fixed track is given by c=|**c**|. A wave propagates. LighTracklets move. Motion is relative, propagation is not. Even though LighTracklets move at the speed |**c**-**v**| relative to an observer moving at speed **v**, the speed of light on its track is always c, unaltered relative to observers.

A LighTracklet is the composite of light wave on its track including the track. A LighTracklet is like a Caterpillar without steering where Caterpillar carries its own track that it travels on. The speed of the Caterpillar on its track is observer independent. However, the Caterpillar including the track as a single unit is relative. Motion of LighTracklet is relative since its track moves unaltered relative to observers. Propagation of light waves on its fixed track is not relative. The direction of the propagation of light wave on its fixed track and the speed of the propagation of light wave on its fixed track are observer independent. Any entity that moves is relative. Any entity that propagates is not relative. A LighTracklet or a light burst is relative since it is associated with its fixed track that moves unaltered relative to a moving observer as shown in Fig. 2.1 and Fig. 2.2.

Property:

Motion is relative, propagation is not. Motion of a LighTracklet is relative since its track moves unaltered relative to a moving observer. Propagation of light on its fixed track is not relative. A LighTracklet represents the light propagating on its track at a fixed speed in the vacuum or in a medium. What we see are the motion of light bursts (LighTracklets), not the propagation of light on its fixed track. Observer cannot alter propagation of light on its track. A LighTracklet including the track only shifts unaltered relative to moving observers. It is no different form how a train moves relative to moving observers without a train derailment.

Light does not propagate on inertial frames or in a medium. Light propagates in space, in the empty space. This is evident from the fact that the light does not move with the medium if the medium is pulled out [5]. If light is propagating in a glass, light does not move with the glass if the glass is pulled out unless the glass is a cladding-guided fiber optic. The speed,

direction, and the path of light are fixed in the vacuum and affected by a medium. The speed, direction, and the path of light are independent of the motion of an observer.

If we have a fiber optic connecting the floor and the ceiling of a moving cabin vertically, then, the vertically released light pulse in the fiber optic propagates vertically inside the fiber relative to an observer inside a cabin. It is only the light in a guided medium such as a fiber optic where the light can be relative at least theoretically, not in free space. Nobody can see the light propagating in guided medium such as a fiber optic. If observers cannot see the light, then, there is no relativity there. So, the light propagation in a guided medium cannot define relativity. Lorentz Transform, Special Relativity, and General Relativity are not applicable under any circumstance since observers cannot derail light since the track, direction, and speed are fixed in a medium.

Property:

The paths of light in Lorentz Transform, Special Relativity, and General Relativity are limited for the light paths in fiber optics; they do not apply for the light in free space. Even for light in fiber optics, Lorentz Transform, Special Relativity, and General Relativity fail since no outside or inside observer in a moving cabin can see the light propagating inside the fiber optics. There is no relativity if the observers cannot see the light as in the case of light propagating in a guided medium such as a fiber optic. Propagation of light is not limited to fiber optics and any real Relativity theory must be compatible with the light in free space. Lorentz Transform, Special Relativity, and General Relativity do not have light paths that represent the propagation of light on free space or in an unguided medium.

Lemma:

A train has no motion outside the track. If a train is travelling at constant speed c, it is the train track that shifts or moves against the direction of the motion of an observer relative to the observer, not the train itself. Train travels at the same constant speed c on its track relative to any observer.

Corollary:

If the velocity of light is **c**, then relative to an observer moving at velocity **v**, where $-\infty<v<\infty$, $v=|\mathbf{v}|$, the speed of the LighTracklet (Light on the track including the track) is $|\mathbf{c}-\mathbf{v}|$ and the speed of propagation of light on its track relative to the observer is $c=|\mathbf{c}|$, unaltered. The velocity of the light on the track relative to the observer is **c**, unaltered.

a) **Motion of LighTracklets**

Definition: LighTracklet

LighTracklet is a fixed track carrying a propagating light wave of finite span on it. It is the composite of the track and the propagating light wave on it as a single entity.

When we see light, what we see is the motion of light bursts or LighTracklets relative to us, not the propagation of light waves. Hence, we must consider the motion of LighTracklets, not the propagation of light waves. Propagation of a light wave on its track is independent of observers. Relative to a stationary or moving observer, a LighTracklet is moving on the track at the speed of light since the light is propagating at the speed of light. Irrespective of whether the observer is moving at constant speed or at an acceleration, what observers see is the light bursts or LighTracklets, and hence we can disregard the propagation of light and consider only the motion of LighTracklets relative to observers. It is no different from a train on a massless track or a steering disabled bulldozer or a Caterpillar except light and its track are massless. Relative motion of an observer does not affect the motion of a train on its track. Motion of an observer cannot physically alter anything. If the velocity of the propagation of light on its fixed track is **c**, then, no observer can change that reality.

A moving observer sees that the track is moving unaltered relative to the observer. Since it is the track that is moving unaltered to the observer, whatever moving on the track remain unaltered relative to the observer motion. It can be light propagating on a fixed track, train travelling on its fixed track, or a steering-disabled bulldozer or a Caterpillar moving on its track, their motion or propagation on their track are unaffected by observer motion. For a stationary observer relative to the vacuum, LighTracklets have only a single speed component, which is the speed of light on its fixed track. For a moving observer, LighTracklets have an additional speed component equal to the speed of the observer against the direction of the observer relative to the observer. Even though LighTracklets have an additional speed component relative to the observer, the motion of LighTracklets on their fixed track and the propagation of light on the track remain unaltered relative to the observers.

Relative to a stationary observer, LighTracklet moves at the speed of light in the direction of propagation of light on its fixed track. The velocity of propagation is given by the vector **c**, where $|\mathbf{c}|=c$ and the direction of **c** is the direction of propagation on its fixed track. If an observer is moving at velocity **v**, then the relative to the observer velocity of the propagation of light on its fixed track is **c**. However, the velocity of the light burst, or the LighTracklet relative to the observer is $\mathbf{c}-\mathbf{v}$. The velocity of the propagation of light on its track remains unaltered relative to observers.

The speed of the light c on its track remains unaltered relative to moving observers since the track is fixed in the vacuum and can only be altered by a medium. The direction of the propagation of light on its track remains unaltered relative to observers since the direction is fixed in the vacuum and can only be altered by a medium. The path of propagation of light remains unaltered relative to observers since the path is fixed in the vacuum and can only be altered by a medium. It is only that a light burst has acquired an

additional speed component relative to an observer without altering the propagation on its track. Speed of propagation of light on its track is independent of observers. Direction of propagation of light on its track is independent of observers. The path of the propagation of light is independent of observers. The light bursts that we see are relative while the propagation of light on its fixed track is not relative.

Relativity is all about motion, not propagation. If we are on a stationary frame, when we look at light, what we are looking at are light bursts or LighTracklets moving at the speed of light, not the light wave propagating within a light burst or a LighTracklet. The direction of the motion of a LighTracklet relative to a stationary observer or the vacuum is the same as the direction of the propagating light wave within the LighTracklet. So, the stationary frame is the vacuum. Vacuum is the absolute frame. Vacuum is the only frame where unguided free space light propagates on. However, we can confine light into a guided medium such as a fiber optic and make light relative; in this case it is not a free space propagation. Observers cannot see the light in fiber optics until light leaves the guided medium. Once light leaves the guided medium, the propagation of light on its track is no longer relative but the motion of light bursts is relative.

LighTracklet contains the propagation of light on a fixed track and hence the light propagates on the track at the speed of light c relative to any moving observer. It is track that moves relative to observers without altering the track or what is moving or propagating on the track. The motion of the track of light is no different from the motion of a train relative to observers. A train track cannot be altered by running toward or away from it. The track and anything on the track cannot be altered by running toward or away from the track. The track of light is fixed in the vacuum and can only be altered by a medium, not by observers. There is no moving train without its track. There is no propagating light without its fixed track

"*The track can only be altered by a medium. Observer motion cannot alter the track. Observer motion cannot alter anything or any activity on the track. It is the track that moves relative to observers unaltered.*"

A light burst or LighTracklet is just like a massless bulldozer without steering, which travels on its own fixed track except that it is not a rotating track. The speed of the bulldozer on its fixed track and the direction are observer independent, not relative. Observers cannot change the track, the direction, and the speed of the bulldozer on its track. However, the bulldozer itself is relative since bulldozer, which comprises the bulldozer and its track as a single entity, moves against the motion of the observer relative to the observer without altering the track, the direction of the track, and the speed of the bulldozer on the track. A burst of light is relative just like a bulldozer without steering is relative. Observers cannot make LighTracklets, or light bursts move physically just like observers cannot make a bulldozer move relative to the observer by running away from it. Light propagates on its fixed track, bulldozer moves on its own fixed track, and a train moves on its own fixed track independent of observers without contradiction to the relativity. Galileo-Newton relativity is a contradiction to light or a train since Galileo-Newton Relativity does not apply for constrained motion. Our task is to understand the natural relativity, not to redefine and build a theory to fit our definition. There is no need of a Special Theory of Relativity. Relativity does not require complicated mathematics or equations.

It is the track that moves unalerted relative to observers, not the train itself. A train on the track is not relative. It is the TRAINTRACKLETS (the train and the track as a composite unit) that is relative, not the train itself. It is the track of light that moves unaltered relative to observers, not the light itself. Propagation of light on its track is not relative. It is the light LIGHTRACKLETS (propagation of light and its track as a composite unit) that are relative, not the propagation of light. There is no speed limit in the universe. Mass and energy are not equivalent. $E \neq mc^2$.

b) **Vertical Light Burst in a Horizontally** M**oving Cabin at Constant Speed**

Assume we fire a light burst from the bottom of a cabin moving at constant speed v to the left as shown in the Fig. 2.1. Light wave propagates vertically at speed c on its fixed track irrespective of the speed v of the cabin. As a result, light burst moves vertically on its fixed track. The track also has a constant speed v towards the right relative to the moving cabin. Light burst cannot come out of the track. Light burst is confined to the track. Whatever light does on the track is unaffected by what train does. So, irrespective of what the speed of the train, light propagates vertically on its track that is fixed in the medium. The propagation of light on its track is independent of the motion of the cabin (the frame of reference). If the height of the cabin is h, then the time $t_h$ taken for light to reach the ceiling is given by $t_h=h/c$ and it is independent of the speed of the cabin v. Since the medium is unchanged, the track of light is vertical, and light propagates on this fixed track at speed c vertically. Motion of the train has no effect on the travel time of the light burst from the bottom of the train to the ceiling of the train, it is not a function of the speed of the moving train v.

Since light is propagating at speed c on its fixed track, the LighTracklet also moving vertically at speed c. Although the propagation speed of light on the track that is fixed in the vertical direction of propagation is always c, the LighTracklet itself is shifting on the angular path AD relative to the cabin at the speed $v_{LighTracklet}=(c^2+v^2)^{1/2}$ relative to the moving cabin. The motion of LighTracklet on the angular path AD at speed $v_{LighTracklet}=(c^2+v^2)^{1/2}$ is not a contradiction to the constancy of the speed of the propagation of light in the vacuum or in a medium. Motion of light bursts (LighTracklets) is not governed by Maxwell equations.

It is only the propagation of light on its fixed track that is governed by Maxwell equations.

Light propagates at speed c on its vertical track independent of observer motion. If v=0, cabin is stationary and the LighTracklet is moving vertically at the same speed as the speed of light, $v_{LighTracklet}=c$. However, the speed of propagation of light on the fixed track relative to the moving cabin is always c, unaltered. Propagation of light is independent of the frame of reference. It is the track of the light that moves relative to moving frame. It is the LighTracklet (light including the fixed track) that is relative and moves on the angular path AD while the track remains vertical, unaltered relative to observers.

Propagation of light on its fixed track is not relative. A LighTracklet moves relative to observers. Light Propagates on its fixed track in a fixed direction unaltered relative to observers. Propagation of light is independent of observers. Light can never be derailed by observers. Speed of light can never be altered by observers. The direction of propagation can never be altered by observers. The speed, direction and the track of light can only be altered by a medium, nothing else. Observers cannot derail a train. Einstein derailed trains in Special Relativity. For Special Relativity to hold, observers should be able to derail a train, which is naturally prohibited. Special Relativity is hypothetical, not real. It is time to accept the fallacy of Special Relativity instead of adhering to a meaningless theory religiously.

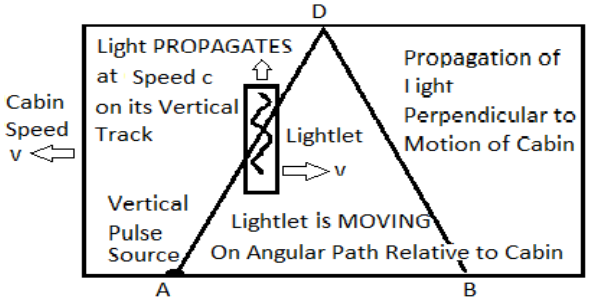



Fig 2.1: Light propagates vertically on its vertical track. LighTracklet (Lightlet in the figure) is shifting unaltered to the right relative to the cabin against the motion of the cabin at the same speed v as of the cabin while the light is propagating vertically on the fixed track at speed c.

"*Relativity cannot alter reality*."

A LighTracklet or Light burst is a light wave of finite span on its fixed track including the track. LighTracklet is non-separable from its fixed track. Light propagates on the track irrespective of observer motion. There is no derailment relative to observers here. LighTracklet itself does not move physically. Moving observer sees light bursts or LighTracklets moving against the observer motion relative to the observer just like a moving observer sees a mountain moving against the observer motion relative to the observer.

"*Observers cannot derail light.*"

It is the same for an accelerating observer at any time t. A LighTracklet itself does not move at an acceleration against the motion of observers. It is just that the moving observer sees it moving against the observer at an acceleration relative to the observer since observer is accelerating. Relativity cannot change the reality. We cannot move a mountain by running away from it. We cannot move a LighTracklet by running away from it. Our running does not make things around us to move against our motion physically. We cannot alter what is around us by running away. Our running does not alter physical reality around us. Moving observer sees that the other entities are moving relative to the observer motion, nothing more.

So, there is no reason to place any scientific importance to the motion of a LighTracklet against the observer motion relative to a moving observer just as we cannot place any scientific importance to the motion of a mountain against the moving observer relative to a moving observer, or a motion of a train relative to an observer. Mountain does not change because of our running, state of a train on the track does not change because of our running, so does a light burst. Light burst itself is unaffected by the motion of observers. Relativity is not real. There is nothing special about relativity of light except that a mass cannot move relative to light. Special Relativity is not real, hypothetical. There is no science in Special Relativity. Special Relativity is a non-scientific mockery.

Laws of nature are independent of frame of reference without Special Relativity. Maxwell equations for propagation of light are independent of frame of reference without Special Relativity. No Special Theory of Relativity is required for Maxwell equations for propagation of light to be frame independent. No Special Relativity is required for Newton's motion dynamics of objects. No Lorentz Transform is necessary for Maxwell equations to be independent of the frame of reference.

Laws of nature are independent of frame of reference without Special Relativity. Motion dynamics do not apply for massless. Motion dynamics do not apply for light. Light does not move. Light propagates. Any entity with momentum cannot propagate. Light has no momentum. You cannot impose a momentum on light by proclamation. Special Relativity impose a momentum on light by proclamation. Relativity between light and a moving observer is not reciprocal. Observer has no motion relative to light since light has no standstill existence. Any entity that does not have a standstill existence cannot be relative.

A mass cannot increase because somebody ran away from it. One cannot make someone lose weight by running away from that person. We cannot make the length of an object contract by running away from it. We cannot change the age of somebody by running away from that person. Relativity cannot alter the mass, length, and time. Time is not a dimension. To be a dimension or an axis, all the points must be accessible. In the case of 3D space, all the points are

accessible on x, y, z axes both forward and backward. In the case of time, all the points are not accessible, only one point is accessible. It is only the present that is available in time and hence time does not represent an axis in the same sense as x, y, and z axes in 3D.

There is no $4^{th}$ dimension. Time is not a dimension. There is no spacetime as a 4D space. Any dimension less than 3D cannot exist without 3D. Any dimension higher than 3D is not required for the existence of 3D. What exist is 3D. Any higher dimension beyond 3D is simply a hypothetical construct that has no physical existence. A dimension cannot roll around. A roll around dimension cannot be orthogonal to other dimensions. A dimension cannot roll around without trespassing other dimensions and hence a roll around dimension is not a dimension. Roll around dimension defy the definition of dimension; it cannot exist.

Lemma:

Propagation of light on its track is not relative. The speed of light on its track is fixed. An observer motion cannot alter a track of light. It is the track that moves unaltered relative to a moving observer. It is a light burst or a LighTracklet that is shifted unaltered relative to observer motion. A burst of light is relative since the track moves unaltered relative to observers. Speed of motion of a burst of light depends on the motion of an observer since the path of light or the track shifts unaltered against the motion of observer relative to the observer while the propagation of light on its fixed track remains unaltered relative to an observer.

The path AD for a light burst shown in the Fig. 2.1 is relative to an observer in the cabin. For a stationary observer outside the cabin or relative to the vacuum, the path of the LighTracklet is straight up, vertical since light burst was released vertically. A burst of light or LighTracklet shifts on the linear angular path AD relative to an observer in the moving cabin.

Einstein's claim that the path of propagation of light relative to an observer inside the cabin is vertical, and the path of propagation of light relative to a stationary observer outside is the angular path AD is false. Path of propagation of light is vertical for both inside observers, and outside observers. Observer cannot change the path of the propagation of light since the path is fixed in the vacuum and altered only by a medium.

Einstein's claim only true for a mass thrown from the bottom of a moving train vertically; it does not hold for massless. Light has no mass. Light is not relative. Propagation of light is not relative. It is only the motion of light bursts that is relative. It is the track of light that moves unaltered relative to observers while the propagation of light on its vertical fixed track remains unaltered relative to all observers.

Any entity with speed, direction, and the path fixed in the vacuum and affected only by a medium cannot be relative. Light is not relative [2]. Light does not propagate relative to moving bodies. A source of light is relative but propagating light is not relative. Once light is emitted from a source, the emitted light burst is not anchored to the source. Light can propagate because light is not anchored to a source. Once a light burst is out of a source, it has no attachment to the source. The speed and the path or the track of a light burst is solely fixed in the vacuum and affected by a medium. The direction of the propagation can only be altered by a medium, not by observer motion.

If a burst of light is released vertically from the bottom of a train that is moving horizontally, propagation of light never takes an angular path relative to a stationary observer outside the cabin as it was falsely claimed in Special Relativity. An observer cannot derail the light. The speed, the track, and the direction of light are fixed. An observer cannot change the direction of light. It is only a medium that can change the direction of light after it is emitted from a source. Initial direction is fixed by the source. Once a light burst is released, it is not anchored to the source and the path is solely fixed in the medium, which is independent of observers.

The vertical track of light, with light propagating on the track vertically, shifts on an angular path relative to the moving cabin. There is no light propagating along AD. Light propagates on a vertical track although the light burst, carrying vertically propagating wave, shifts on the angular path AD relative to an observer in the cabin. The angular path AD portrayed in Special Relativity as the path of propagation of light relative to a stationary observer outside the cabin has no actual light propagating on that path. Vertically released burst cannot changed its track to an angular track under any circumstance relative to observers if the medium is unchanged since the track of light is fixed in the medium.

Observers cannot derail light. Observers cannot derail a train. Observers cannot derail a Caterpillar. Observers cannot derail a bulldozer. In the moving cabin in Fig. 2.1, which is the same moving cabin used in Special Relativity, light always propagates VERTICALLY at the speed of light c on its fixed track while the LighTracklet is shifting along the angular path AD relative to an observer inside the cabin. Relative to a stationary observer or an observer on the stationary platform, LighTracklets move at speed c on its track Irrespective of the state of the cabin. Light propagates at speed c vertically on its fixed track relative to any observer inside or outside the cabin.

The claim in Special Relativity that a burst of light released vertically from the bottom of a moving cabin that is travelling horizontally takes a vertical path relative to an observer inside the cabin is false since light has no mass. Massless cannot be relative. Massless has no momentum. Light is not relative. The momentum imposed on light in Special relativity is hypothetical, imaginary, no real existence. The claim that the same light burst is seen as travelling on an angular path by a stationary observer outside is also false. It is the stationary observer outside who sees the light travelling vertically. For an observer inside the moving cabin also light travels vertically on its track while the track is shifting against the motion of observer at the same speed as the observer without

altering the track. As a result, it is the light burst or the LighTracklet that shifts on the angular path AD relative to an observer in the moving cabin.

The speed of propagation of light on the track is constant and independent of any observer. We do not need to enforce it to be a constant. Nature will take care of it. The speed of any entity that travels on a fixed track is unaffected by the motion of an observer since that entity has no motion or propagation off the track. Light does not exist on the paths specified by Special Relativity since observers cannot alter the track. Special Relativity derailed the light and as a result light in Special Relativity is imaginary, not real.

If we design a clock based of the reflection of a light burst or (LighTracklet), that clock will be sensitive to the motion of the clock. Clock must be recalibrated for every variation of the velocity for accurate time. Instead, if a clock is design based on the propagation of light on its fixed track, then, the clock will be independent of the motion of the clock. The dependence of the clock on the speed of the clock depends on the design of the clock.

If the clock design is based on the motion of light bursts (LighTracklets), since v<<c, it still serves the purpose without recalibration for most practical purposes. It is not the time that depends on the speed. It is the clock based on a reflection of a light burst that depends on the speed of the clock. Time is not relative. A mechanism of a clock is relative. The claim in Special Relativity that time itself is relative is false. Relativity cannot change the reality. Relativity cannot change the time. Relativity cannot alter anything physically.

If we define time using reflection of light bursts, then, it is our definition of time that is relative, not the time itself. If the mechanism of a clock is sensitive to the velocity of its motion, then, the clock must be calibrated for the velocity the clock is about to be used. Display of a clock means nothing unless it is properly calibrated for the environment the clock is in. An engineered device works correctly only if the design requirements for proper operations are met. If you want to design a clock based on light, then, design it based on the propagation of light on its fixed track for it to be speed independent, not based on relative time of the light bursts (LighTracklets).

Relative motion can make physical change only if the motion is associated with a field and the change of field flux influences the other. If one is a magnet and the other is a conductor, the relative motion, irrespective of what is moving, can generate a current on the coil. If the motion does involve a field and the change of field has no effect on the other, then relative motion has no physical effect. The physical effect generated by the relative motion of magnet and conductor is active relativity and hence it cannot be generalized to passive relativity.

Motion of two masses is passive relativity if we disregard the gravitational effect between the masses. Running away from a mountain is passive relativity where mountain is not altered by any mean by the runner and vice versa (if we ignore the gravity). Light propagating in a moving cabin is passive relativity. The motion of the cabin does not alter the propagation of light and vice versa. Observer in a moving cabin sees a burst of light released vertically taking an angular path, and a stationary observer outside the cabin sees the same burst of light taking vertical path; this does not change the reality that the light propagates on its fixed track vertically independent of what observers see. For both observers, the light propagates on its fixed track vertically at constant speed c.

Observers cannot disregard the constrains of the motions. For observers moving at different speeds, it only appears that the wave burst is taking different path relative to observers, even though propagation of light on its track does not change. Observers see light bursts or LighTracklets. There is no special theory to relativity between light and observers. There are no complicated equations for the relativity between light and moving observers. Observer motion cannot change reality. What I see while moving does not change what it is.

Lemma:

The paths of light in Einstein's moving cabin are not real. The paths of light in Special Relativity and General Relativity are not Real. Light does not propagate on those paths. Special Relativity and General Relativity derailed the train.

"*It appears to a moving observer that a light burst is taking an angular path does not mean light is propagating on an angular path. Moving observer cannot alter the path of light.*"

Property:

The motion of a LighTracklet and the propagation of light on its fixed track within the LighTracklet are not the same relative to observers. They are the same relative to stationary observers in a vacuum or when v=0. In the case of a vertical light burst on a horizontally moving cabin, although LighTracklet shifts on an angular path relative to a cabin, the direction of propagation of light wave on the track within the LighTracklet remains vertical and unaltered relative to the moving cabin.

In a relative motion of two objects, one object cannot have a physical impact on the other unless they are physically bonded by a field so that the relative motion of the field generate a physical effect on one of the objects or both. The relative motion between two objects alters the gravitational attraction between them. Relative motion between magnet and a conductor generates a current on the conductor. Motion of an object does not alter its mass and time. Although a light burst moves relative to an observer, relativity between light and observer is not reciprocal.

Observer has no motion relative to a light burst since light has no stand still existence. Anything that has no standstill existence is not relative. As a result,

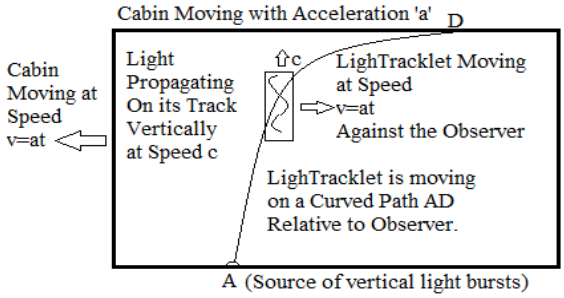
the claim that a rest mass m has a relative speed c relative to the propagation of light and has energy $E=mc^2$ is false, $E\neq mc^2$. A mass does not have rest energy $E=mc^2$ unless the mass is moving at constant speed c from standstill, which is impossible since no mass can start at constant speed. Speed of light has nothing to do with the energy of a mass. Nothing can move relative to light since propagation of light is not relative. Einstein's mass energy equivalence is false.

Lemma:

Speed of a light burst is relative. Speed of propagation of light is not relative. The speed of a light burst and the speed of the propagation of light are the same relative to the stationary frame, the vacuum.

c) **Vertical Light Burst in a Horizontally Accelerating Cabin**

Situation for an accelerating cabin is given in Figure 2.2.




"*Observers cannot derail light. No derailment here*."

Fig 2.2: LighTracklet, which is the propagating wave on its fixed track including the track, is moving at speed v=at against the direction of motion of the cabin relative to the cabin horizontally while it is moving at speed of light c vertically on its track at any time t.

Now, assume we have a stationary cabin and at t=0, we send a light burst from the bottom of a train vertically. Speed of propagation of light on its vertically fixed track in the light burst is c. The direction of propagation of light is vertical on its track since the vertically directed light burst propagates vertically in a vacuum. The light burst travels at the speed of light c vertically the height h of the cabin to reach the top at time $t_h=h/c$ independent of the motion of the cabin. The speed and direction of the propagation of light in a vacuum or a medium remains unaltered unless the medium is changed.

However, since the cabin is moving at an acceleration 'a' to the left, at time t, the track of the light burst has a speed v=at to the right against the motion of the cabin relative to the cabin. So, at time t, since light propagates on its vertical track at speed c, the light burst has a vertical speed c. Since the track is moving horizontally at speed v=at to the right relative to the cabin, light burst also has speed v=at horizontally to the right. At any time, t, a light burst has a vertical speed component c and a horizontal speed component v=at relative to an observer in the accelerating cabin, yet the speed of propagation of light on its vertical track relative to any observer is c, a constant.

The propagation speed of the light wave on the fixed vertical track withing the burst is unaffected by the acceleration of the cabin. The direction of the propagation of light wave within a LighTracklet is unaffected by the acceleration of an observer since it is fixed in the vacuum and can only be altered by a medium. The light wave in a vertically directed light burst propagates vertically on its track irrespective of the motion of an observer. It is only the wave burst or the LighTracklet that moves at speed 'v=at' at time t to the right with respect to the moving cabin. This is very similar to the motion of a steering-disabled bulldozer relative to a moving observer.

If the height of the cabin is h, the time taken for the light burst to propagate vertically on its fixed vertical track, $t_h$ is given by $t_h=h/c$. It is no different from the time taken for the light burst to reach to top of the cabin in Fig.2.1 when the cabin is moving at constant speed horizontally. The vertically travel time of a light burst is unaffected by the horizontal motion of a cabin relative to an observer in the cabin irrespective of whether the observer is moving at constant speed or at an acceleration.

Since light is propagating at speed c on its vertical track, the LighTracklet is also moving at speed c vertically on its track at any time t independent of observer motion. Relative to the accelerating cabin, a LighTracklet or a light burst takes a curved path. Propagation path of light wave within the LighTracklet is unaltered relative to the cabin and remains vertical. Vertically directed light burst in a vacuum has a vertical track that is fixed. The light in the burst propagates vertically on its track. Propagation speed of light on its track relative to any frame of motion is always c in the direction of propagation. Propagation of light is independent of the frame of reference irrespective of whether the frame is an inertial frame or accelerating frame. It is the LighTracklet that moves relative to moving frame. Speed of propagation of light on its fixed track and the direction of propagation of light are unaffected by a frame of reference. It is the LighTracklet, or wave burst, that is relative, not the propagation of light on its fixed track within the LighTracklet. A LighTracklet shifts on a curved path relative to the accelerating cabin while the light wave within the LighTracklet propagates on its fixed track at constant speed c vertically in Fig 2.2.

So, the time $t_h$ taken for the light burst on the vertical track to reach the top is given by $t_h=h/c$. The travel time is independent of the frame of reference even when the frame is accelerating. The speed of propagation of light wave on a fixed track is not affected by the frame of reference irrespective of whether the frame is an accelerating frame or an inertial frame. Similarly, the direction of the propagation of light wave is unaffected by the motion of a frame irrespective of whether the frame is inertial or accelerating.

This is no different from the motion of a steering-disabled bulldozer relative to a moving observer. Speed of the bulldozer on its track is unaffected by the motion of the observer, it is fixed. However, the relative speed of the bulldozer (bulldozer including the track) depends on the motion of the observer. It is the track that moves unaltered relative to observers.

The Fig. 2.2 shows the path of a light burst relative to an observer in the moving cabin at an acceleration. If the cabin is accelerating, the vertically propagating light burst on a fixed vertical track shifts on a curved path AD relative to an observer inside the cabin. Relative to a stationary observer outside the cabin or relative to the vacuum, the path of light is straight up, vertical for a light pulse released vertically from the bottom of an accelerating frame. It is the LighTracklet, which is the propagating wave on its fixed track together with its track that is fixed in a medium, that is relative in the same sense as a train is relative.

"*The propagation of light on its track is not relative. Motion of a train on its track is not relative. Propagation of light on a fixed track is independent of the state of an observer*."

The LighTracklet is shifting on a nonlinear path at the speed $v_{LighTracklet}=[c^2+(at)^2]^{1/2}$ at time t. The propagation of the wave on its vertical track remains unaltered relative to the accelerating cabin. The speed of the light on its vertical track withing the LighTracklet is c relative to the cabin. The vertical direction of the light within the LighTracklet is unaltered relative to the cabin an remains vertical until it hits the ceiling, a change of medium. The track of the light is unaltered relative to the cabin since the track of light is fixed in the vacuum or in a medium. The track of light is solely fixed in the vacuum and only altered by a medium. When a=0, the cabin is stationary and the speed of the LighTracklet relative to the cabin is the same as the speed of light.

Property:

Light can neither accelerate nor feel an acceleration since light has no mass. Massless has no momentum. Light has no momentum. There is no relativity relative to massless. A light burst has a relative motion relative to a mass. But a mass has no relative motion relative to light since light has no standstill existence. Relativity between light bursts and a mass is not reciprocal.

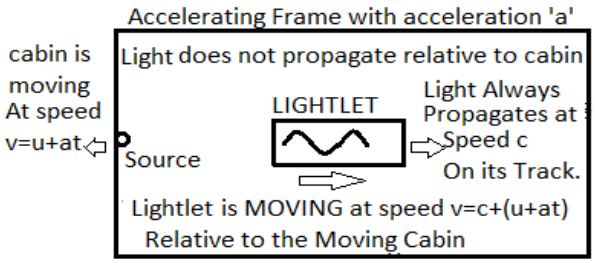
Corollary:

Although propagation of light is not relative, the track of a burst of light is relative in the same sense as a steering-disabled bulldozer is relative. Speed of motion of a burst of light depends on an accelerating observer since the path of light or the track shifts against the motion of observer relative to the observer while the propagation of light on its fixed track remains unaltered relative to the observer.

d) **Horizontal Light Burst Against the Horizontally Moving Cabin at Constant Speed**

Consider the case where a light burst is moving against the direction of the moving cabin. A light burst is released against the direction of the moving cabin as shown in Fig 2.3. The propagation of light is not relative. No observer can change the actual direction of the propagation of a light wave or the speed of the propagation of light wave on its fixed track within the light burst. They are fixed in the vacuum and only affected by a medium if a medium is present. Light does not propagate in a medium. Light propagates in the vacuum. The fact that if we pull out the medium, light does not move with the medium is a good indication that the light does not propagate in a medium [5].

Although the propagation of light is not altered by the motion of the cabin, the relative speed of the LighTracklet, which is the fixed track with the propagating light on it, varies with the motion of the cabin. In this case, relative to the cabin, LighTracklet is moving faster, but the speed of the light on the fixed track within the LighTracklet remains unaltered relative to the cabin. Observer motion has no effect on the propagation of light on its fixed track just as the motion of an observer has no effect on the speed of a train on its track. The path of light and the speed of light on its fixed track are independent of observer motion. It is the track that moves unaltered relative to the motion of observer. It is the LighTracklet that is relative.




*Light cannot feel the acceleration since light has no mass. The fixed track of a light burst moves unaltered relative to an inertial or an accelerating body.*

Fig 2.3: The LighTracklet (Lightlet in the picture) is moving to the right on its track at speed c since light is propagating on its fixed track at speed c. As a result, relative to the accelerating cabin, the LighTracklet is moving to the right at speed v=c+(u+at) at any time t.

Propagation Speed of light on its fixed track relative to the cabin is always c in the direction of propagation. Propagation of light on its fixed track is independent of the frame of reference irrespective of whether the frame is an inertial frame or accelerating frame. It is the LighTracklet that moves relative to moving frame. Although the speed of propagation of light on the fixed track is independent of the observers, the speed of a LighTracklet, which includes the track, is not limited to c relative to an observer since the track of the LighTracklet shifts relative to an

observer at the same speed v as the observer against the direction of motion of the observer at any time t. A LighTracklet MOVES relative to an observer. Light within a LighTracklet PROPAGATES on its fixed track independent of observers. No observer can derail the light from its fixed track. Einstein's Special Relativity is an outcome of breaking this natural law. Einstein derailed the light.

As shown in the Fig 2.3, when a light burst is travelling against the direction of the cabin, the wave burst is moving on its fixed track at speed c in the direction of propagation of the light wave in the burst. At the same time, the wave burst also moving to the right relative to an observer in the cabin against the speed of the cabin at the same speed as the cabin. Since the cabin is accelerating to the left at acceleration 'a', the LighTracklet is moving at speed v=c+(u+at) to the right. Although the propagation of light is not relative, the LighTracklet is relative and moving at speed v=c+(u+at) at time t.

At time t, the light wave on its fixed track within the LighTracklet has propagated the distance d=ct at speed c. Light does not propagate anywhere except on its fixed track at constant speed c. At time t, the LighTracklet has also travelled the distance $d=ct+ut+(1/2)at^2$ at speed v=c+(u+at) relative to the cabin. The distance light propagates on its track at any time t is the less than the relative distance LighTracklet travels relative to the accelerating cabin when the direction of the wave burst is against the motion of the cabin.

Assume you are on the side of a railway track and the train on the track is travelling at speed c in one direction. Now you start running at speed u at an acceleration 'a' against the direction of the train parallel to the track. Then, relative to you, the TRAINTRACKLET (the train including the track) is moving at speed v=c+(u+at) away from you. However, the speed of the train on the track relative to you is still c. Speed of the train on the track is independent of observers. Speed of motion of the TRAINTRACKLET depends on the observers. Motion of the train has no independent existence without its track.

"*Light propagates on a fixed track. A LighTracklet (light including the fixed track) is relative and depends on the motion of observers. However, the propagation of light on the fixed track is observer independent. Propagation of light on its fixed track is not relative. Speed, direction, and the path of propagation of light are independent of the observers*."

Property:

It is the motion of the LighTracklet (light including the track) that is relative. Propagation of the light on the track withing the LighTracklet is not relative. Although the speed of light on its track is a constant relative to any observer, the speed of motion of a LighTracklet relative to an observer is not a constant and it does not violate the Maxwell equations for propagation of light. Motion of LighTracklets is not govern by Maxwell equations.

Property:

No observer can alter the path of the propagation of light. Observers cannot derail a train. Observers cannot derail armored tank or a bulldozer. Although the motion of a bulldozer (the bulldozer with its track) is relative, the motion of the bulldozer on its fixed track is observer independent, not relative. Although a burst of light (light and its track) is relative, the propagation of light on its fixed track is observer independent, not relative.

In fact, a LighTracklet does not move physically relative to observers just as a mountain does not move physically relative to a moving observer. For a moving observer, LighTracklet appears to be moving relative to the observer. There is no actual motion of the LighTracklet against the observer. The speed of light on its track cannot impose any limitation on the speed of the motion of an observer. Observer can move at any speed observer wants. Propagation of light on its track is unaffected by observer motion just as the motion of a train is unaffected by the motion of an observer. Similarly, the propagation of light has no effect on the motion of an observer. Observer is free to move at any speed at any direction. Speed of light on its track has nothing to do with the speed of an object or observer and vice versa. There is no speed limit. Anything can travel faster than light.

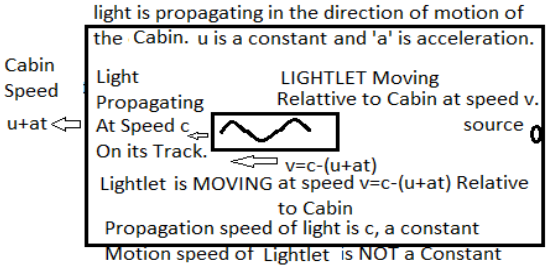
"*The Claim that "nothing can travel faster than light" is false, meaningless, artificial; it is not a scientific claim by any mean. The speed of an object is completely independent of speed of light. Universe has no speed limit.*"

e) **Horizontal Light Burst in the Same Direction as the Horizontally** M**oving Cabin at Constant Speed**

A light burst travelling in the same direction as a moving cabin is given in Fig 2.4. A light burst or a LighTracklet (light including its fixed track) moves to the left at speed v=c-(u+at) relative to the accelerating cabin at any time t. The light is propagating on its fixed track in the same direction at constant speed c. The speed of propagation of light on its fixed track relative to the cabin is always c in the direction of propagation. Light has no propagation off its track. Light has no existence off its track. Propagation of light on its fixed track is independent of the frame of reference irrespective of whether the cabin is moving at constant speed or at an acceleration. It is the LighTracklet, which is the light wave including the fixed track, that moves relative to the moving cabin. It is the motion of LighTracklet that is relative. Propagation of light on its fixed track within the LighTracklet is not relative. Observers cannot derail the light from its fixed track.

The case where a burst of light is released horizontally along the direction of the moving cabin is given in Fig. 2.4. Cabin is accelerating to the left at initial speed u with acceleration 'a'. A light burst or a LighTracklet is released at time t=0 in the direction of

motion of the cabin. Light wave within the LighTracklet propagates on its fixed track to the left at the propagation speed of light c that is fixed in the vacuum, and it is independent of the motion of the cabin. However, what any observer in the cabin sees is not the propagation light. Any observer in the cabin observes a light burst or a LighTracklet (a propagating wave on its track since they are inseparable) moving to the left at speed v=c-(u+at) at time t. So, with reference to an observer in the cabin, at time t, the light burst has moved to the right a distanced given by, $d=ct-[ut+(1/2)at^2]$.




*Light cannot feel the acceleration since light has no mass. The fixed track of a light burst moves unaltered relative to an inertial or an accelerating body.*

Fig-2.4: Light propagates on its fixed tract at constant speed c to the left and hence the LighTracklet moves at speed c to the left on its fixed track. Relative to an observer in the cabin, at any time t, LighTracklet is moving at speed v=c-(u+at) to the left while light is propagating on its fixed track to the left at speed c independent of the observer.

"*Motion of a light burst is relative, propagation of light on its fixed track is not relative. What we see is the motion of light bursts, not the propagation of light*."

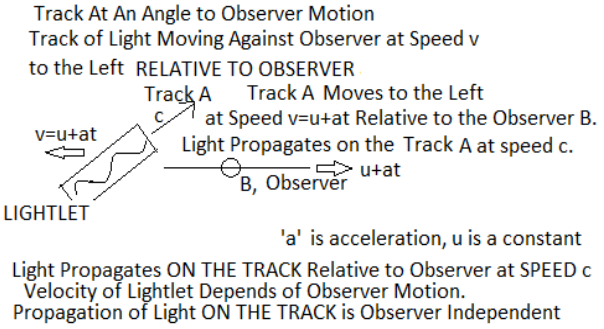
Light propagates on its fixed track at speed c. The distance light wave has propagated at speed c on its fixed track in the vacuum space at time t is given by d=ct. As a result, if the light burst is travelling in the same direction as the cabin, the distance a light burst travel relative to an observer in the cabin at time t is less than the distance light propagates on its track at time t. Propagation of light on its fixed track is independent of observers. Observers cannot alter the track or the direction of the track of light. It is the LighTracklet, which is the wave including the track, that is relative. Speed of a LighTracklet depends on the observers. Speed of light on its fixed track does not depend on observers. There is no time dilation here. There is no length contraction here. There is no mass dilation here. Relative motion cannot alter the physical quantities.

You cannot make a mountain move in different direction by running away from the mountain in different direction. You cannot change the direction of a bulldozer by running away from it. You cannot change the direction of a train on its track by running away from it. You cannot change the direction, the path, and the speed of light by running away or towards light. It is the speed of the motion of a LighTracklet, which is the wave including its track, that depends on observer motion, not the propagation of light on its fixed track within a LighTracklet. Propagation of light on its track is observer independent.

Maxwell equations are independent of the motion of observers [2]. Lorentz Transform does not exist. Lorentz Transform is not real. Light does not propagate on moving frames relative to moving frames. Light propagates in empty space, in the vacuum, and affected by a medium. There are no moving massless frames; what is there are moving objects, moving light bursts, and propagating light waves. The presence of a medium affects the speed, direction, and the path of the propagation of light.

f) **Light Burst or LighTracklet Moving at an Angle to the Observer Motion at An Acceleration**

If we have a track of light at an angle to the direction of an observer moving at speed v=u+at in any direction at any time t, it is the track that moves against the direction of the observer at the speed v=u+at relative to the observer. The speed of light on its fixed track is always c relative to an observer. Speed on the track is unaffected by the observer motion. The motion of the track relative to an accelerating observer is given in Fig. 2.5.




"*Observers cannot derail light. No derailment here.*"

Fig 2.5: The Track of light is at an angle to the direction of the observer motion. Observer is accelerating. At time t, observer moving to the right at speed v=u+at, where 'a' is the acceleration and u is the initial speed or speed at t=0. At time t, the Track of Light is Moving at speed v=u+at Against the Observer Motion to the Left RELATIVE TO OBSERVER. The Speed of Light ON THE TRACK Relative to the observer is the speed of light c. Speed of light on its track is independent of the Observer Motion. When the acceleration 'a'=0, we have an observer moving at constant speed v=u. The Lightlet (LighTracklet) has a speed c on the track while it is also shifting unaltered at speed v=u+at against the direction of motion of the observer relative to the observer at any time t.

The track and the propagation of light together form the LighTracklet (Lightlet in the picture). The LighTracklet moves at speed v=u+at against the observer motion at any time t. The speed of light on

the track remains unaltered at any time t relative to the motion of the observer. Light always propagates on its own fixed track at constant speed irrespective of the observer motion. The track of light moves relative to a moving observer in the same way how a mountain moves relative to a person running away or towards the mountain. Relativity is what moving observers see. No real physical change take place in relativity. Observer cannot physically change the direction, speed, or the path of propagation of light.

No Special Theory of Relativity is necessary. The speed of an entity cannot be a constant or fixed in the vacuum or medium without the path or the track being fixed in the vacuum or in a medium. It is the velocity of light that is fixed in the vacuum. The velocity of light can only be altered by a medium. The speed of light is a constant in the vacuum or in a medium for the very reason the velocity of light is fixed in the vacuum or in a medium.

Special Relativity disregards the fact that the path of light is fixed in the vacuum or in a medium. It is not just the speed of light that is fixed in the vacuum or in a medium, the path of light is also fixed. It is not just the speed of light that must be independent of observers, the path of light and the direction of light must also be independent of observers. Einstein derailed the light. The Special Relativity and General Relativity are not real, they are imaginary. Lorentz Transform is not real, it is hypothetical. There are no real light propagating on the paths in Special Relativity, General Relativity, and Lorentz Transform. Nothing can derail the light. Special Relativity was founded by derailing the light, which is naturally prohibited.

### g) **Free Moving Object Without Fixed Track Relative to a Moving Observer**

Now, let us consider the very common situation of relativity. The relativity of free moving objects. Galileo-Newton relativity applies to free moving object or for unrestricted motion. When we consider relativity in general, we are not talking about any restricted motion. However, some of the motions we encounter are restricted motions. The motion of a train is a restricted motion since train cannot move off the track. The motion of a Bulldozer is a restricted motion since a Bulldozer has no motion off its track. It is same for a Caterpillar or for an Army Tank. The propagation of light is a restricted motion since light has no existence off the track. When we have an object moving without restriction, relative motion has no constrains. As a result, the speed of an unconstrained motion or propagation cannot be a universal constant. The motion of the object in Fig-2.6 cannot have a universal speed.

The speed of a train is observer independent, but the speed of the train is not a universal constant. A path fixed in the medium is necessary for the speed of motion of an entity to be observer independent, but it is not sufficient for the speed to be a universal constant. Both the track and speed must be fixed in the medium for the speed to be a universal constant. Light meets this criterion. Light has a fixed path and fixed speed in the vacuum or in a medium and they can only be altered by a medium, and hence the speed of light is independent of observers.

Unlike the light or a train where the track is fixed, the object here has no fixed track. As a result, the relative direction of the object is not fixed. The speed of the object relative to a moving observer is not fixed. Relative speed of an object cannot be a universal constant when the track of the object is not fixed. On the other hand, a relative speed of a train on its track is independent of the observer motion since observer motion cannot derail a train. The speed of propagation of light on its track is a universal constant c relative to observers since observers cannot derail the light and the speed of light on its track only depends on the medium. Speed of light is determined by the vacuum and can only be altered by a medium.

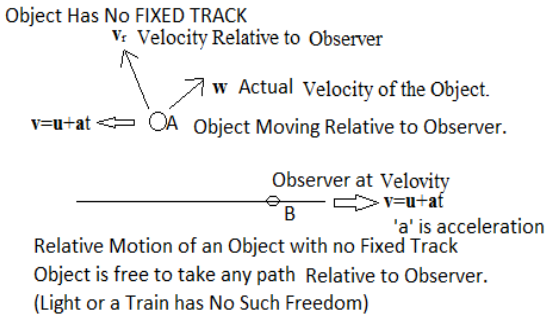



Fig 2.6: Free Moving object (no fixed track of its own). Object has no restricted path. Object is moving at velocity **w**. Observer is moving at velocity **v**. Relative velocity $\mathbf{v}_r$ of the object relative to the observer is given by $\mathbf{v}_r=\mathbf{v}+\mathbf{w}$. Speed of a free moving object cannot be a universal constant since the relative velocity is observer dependent.

"*For an entity to have a universal speed relative to any observer, the path (track) of that entity must be fixed in the vacuum or in a medium in addition to the speed is fixed in the vacuum or in a medium*."

## III. **OBSERVER CANNOT CHANGE TRAIN-TRACK**

Consider a train moving on a railway track. Although a train can take one of the two directions that are fixed, a moving train has a fixed direction. Train has no motion except on its fixed track. A train moving at speed v has a fixed direction. A train can be at constant speed or accelerating. What a train does on its track is completely independent of observers. If an observer runs away from a train in some arbitrary direction and if we blindly apply Galileo-Newton relativity, the trains is travelling in one direction relative to the observer. If the observer changes the direction of running, then again if we blindly apply the Galileo-Newton relativity, the train will be travelling in a completely different direction. If a train travels in different imaginary directions relative to observers, train cannot be on its fixed track. A moving train has no existence off its track. A moving train that has no

off the track existence cannot move in different directions relative to observers.

"*A train cannot jump out of its track and move relative to observers*."

The track of a train is fixed. The direction of a train is fixed. The speed of a train is fixed to whatever the speed the train is running. No observer can alter those. Although no observer can alter the track of a train, the track of a train is relative just like a mountain is relative. It is the train track that moves unaltered relative to an observer. The train on the track travels at whatever the speed it is travelling in whatever the direction independent of the observer. However, relative to a moving observer, the track moves unaltered against the motion of the observer at the same speed as the observer. Relative to an observer, the train on its track has a relative speed component in addition to the speed of the train on the track. What is relative is the train and the track as a composite unit, not the train itself. Similar scenario applies to light since the light can be considered as a massless train propagating on a massless track that is fixed. The only difference is that the light carries its fixed track with it,

Like a train where the track is fixed in the medium, which is not relative, the track of the propagation of light is fixed in the medium, which is not relative. Any entity with a track that is fixed in a medium cannot be relative. Any entity with a fixed track and a fixed speed in a medium cannot be relative. In other words, an entity with a velocity fixed in the vacuum or in a medium cannot be relative. Observers cannot alter the path of light, the track. Observers cannot alter the direction of the propagation of light. Observers cannot alter the speed of propagation of light on its track. As a result, Galileo-Newton relativity of free motion does not apply if the path is fixed in the vacuum or in a medium.

Special Relativity is a result of observers bending the train track or the path of light. Observers cannot bend a train track, a path of light. If a train is travelling on its track, an observer's motion cannot put the train off track. If the light is propagating vertically in a moving cabin, light is propagating on a vertical track fixed in the vacuum or in the medium. An observer cannot derail the light and put it on an angular track. Light has no existence off its track. Maxwell equations do not apply relative to observers.

Relative to an observer in the moving cabin (Fig 2.1), it is a LighTracklet (the light and the track as a composite unit) that can take an angular path, not the light itself. Light has no existence without its fixed track. Light propagates on its vertical track. No angular track exists relative to a moving cabin for a light burst that is propagating vertically. Whether it is relative to an observer in the cabin or relative to an observer outside the cabin, light has a one unique track. If a light burst is released vertically in a vacuum, light propagates on a fixed vertical track irrespective of the motion of observers. It is only the light propagating on a vertical track that can shift unaltered relative to an observer on an angular path.

If a light burst is released vertically from the bottom of a moving train, it is the vertically moving light burst that gets a horizontal speed relative to the cabin against the motion of the cabin. If observer runs at velocity **v** while train is moving at velocity **c** on its track, it is the train track that is moving at velocity -**v** relative to the observer. The speed of a train on its track is unchanged due to the motion of observers. The track of a train is unchanged due to the motion of observers. Relative to an observer, the train is moving unaltered at velocity **c** on its track while the track is moving unaltered at velocity -**v**. So relative to an observer, a TrainTracklet (train and the track) is moving at velocity (**c**-**v**). There is no violation of the "fixed train track" relative to the observers.

For an observer on the station, train is travelling at speed c unaltered on its track. For an observer running in any direction, the train is still travelling at speed c unaltered on its fixed track. If the observer is moving orthogonal to the track, then, the TRAINTRACKLET (the train on the track as a composite unit) has speed $(c^2+v^2)^{1/2}$ relative to the observer. What is relative is the TRAINTRACKLET, not the train. However, relative to any observer, the speed of the train on its track is still c, it is unchanged. There is nothing preventing a train travelling at the speed of light c.

The speed of propagation of light on its path relative to any observer is c. Speed of the propagation of light c is independent of observers. Speed of a light burst, or a LighTracklet (light burst with the track), is dependent of observers just as the speed of a TrainTracklet is dependent on observers. Speed of a train and the speed of propagation of light are independent of observers. In light, what observers see is moving light bursts or LighTracklets, not the propagation of light. In a train, what observers see is a moving TrainTracklet, not a train.

Relativity does not apply for the propagation of light. Maxwell equations that govern the propagation of light are not relative. When observers see light, what the observers see is not the propagation of light. What observers see is the motion of light bursts. Observers see light bursts (LighTracklet) moving. Maxwell equations have nothing to do with the motion of light bursts relative to observers, because there is no real relative motion of the light bursts. Maxwell equations do not apply to observer perception. Maxwell equations do not apply to the motion of light bursts (LighTracklets). Maxwell equations apply for the propagation of light. It is the speed of propagation of light that is fixed in the Maxwell equations, not the speed of the relative motion of light bursts or LighTracklets. Speed of a light burst is not limited since observer speed v is not limited, where $-\infty<v<\infty$. For a stationary observer, v=0, and hence the speed of light bursts is the same as the speed of propagation of light c.

For an observer, light bursts or LighTracklets are relative. Simple Galleon Relativity applies for light

bursts. Neither the Galleon Transform nor the Lorentz Transform apply for propagation of light. Galleon Transform is unique. Lorentz Transform is not unique [2]. A Transform that is not unique cannot be a Transform of nature. Lorentz Transform is not a Transform of nature; it is not real. Propagating light cannot be transformed on to moving frames. Light does not propagate relative to moving frames. Maxwell equations do not apply on moving frames. Maxwell equations applies only on stationary frames. Light propagates in the vacuum, the absolute frame. Light does not propagate in a medium or on moving frames [2,5]. The propagation of light is affected by a medium.

Relativity of moving objects of mass is symmetric. If mass A is moving relative to mass B in one direction at speed v, then, the mass B is moving relative to A at the same speed in the opposite direction. To observe an entity A relative to another entity B, the entity B must be able to be stopped and vice versa. Similarly, to observe entity B relative to entity A, the entity A must be able to be stopped. To observe an object relatively, the object that the observer in must be able to be stopped. Since the motion of masses can be stopped, the motion of two masses is relative. So, there is a reciprocal symmetry in relativity when we have two objects of mass in motion.

Electromagnetic waves do not propagate relative to observers or relative to moving frames. Moving frames do not have any handle on propagation of light. In fact, there is no such thing as massless moving frames. Massless cannot move. There are moving objects. Free moving light is not confined to a moving body. Propagation of light waves is not relative. However, light bursts are relative.

Light bursts or LighTracklets have a relative motion. Light bursts do not move relative to other light bursts. However, light bursts move relative to moving masses since masses have a standstill existence. There are moving light bursts relative to observers. When we see light, what we see is light bursts moving. Light bursts cannot see the other entities relatively since light bursts have no standstill existence. The motion of a LighTracklet or a light burst relative to an observer motion is not a real motion just as the motion of a mountain relative to a moving observer is not a real motion. Light does not move, light propagates. Absolute motion is the motion relative to the vacuum. Absolute frame is the vacuum. Propagation of light is absolute. Light propagates in the vacuum.

In the case of the motion of a light burst relative to a moving cabin, it is only the cabin that can be stopped. The speed of a light burst relative to vacuum, or relative to a stationary cabin, is the same as the speed of propagation of the light wave within the light burst or LighTracklet. Since the light has no existence without propagating, the light burst, or LighTracklet, has no standstill existence. A light burst cannot be stopped. As a result, there is no reciprocity in relativity between the moving cabin and the propagation of light. Propagation of light is not relative [2]. The motion of a light burst is relative, and it is a lopsided relativity. There is no reciprocity of the relativity between a light burst and a motion of a mass. It is meaningless to consider the motion of a mass relative to the motion of a light burst.

In special relativity, light is incorrectly assumed to be relative and hence in Special Relativity, every stationary (rest) mass m has a constant speed c relative to the propagation of light. So, relative to light, any rest mass m has the kinetic energy $E=mc^2$ since rest mass have the speed c from the start, t=0, relative to light. Although the factor 1/2 is common in the kinetic energy of a moving object at any speed v, there is no factor 1/2 in relative kinetic energy since the relative motion at speed v of an object at rest is not real, and the relative kinetic energy is not real. If factor 1/2 is missing from the kinetic energy of a mass, it is an indication that it is referring to the relative kinetic energy of a rest mass that is not real.

A mass to have kinetic energy $E=mc^2$ is not possible since no mass can start at constant speed c, at time t=0. The relationship $E=mc^2$ is an outcome of the false assumption that the light is relative in the Special Relativity. In Special Relativity, light is relative by proclamation. It has never been proven that the light is relative. In fact, it has been proven that the light is not relative [2]. Since the propagation of light cannot be relative, the relationship $E=mc^2$ is false, $E\neq mc^2$. A mass that is at rest relative to a vacuum has no kinetic energy. If mass m has energy $E=mc^2$, that that mass m must be travelling at constant speed v, where $v=(2)^{1/2}c$. There is nothing to prevent for a mass travelling faster than the light. A rest mass in the vacuum cannot have kinetic energy.

The claim that the rest energy of a mass $E=mc^2$ is meaningless since all the energies are not created equal. Energy can be electromagnetic energy or mechanical energy. Mechanical energy can be kinetic energy of a moving mass at speed v or the potential energy, which van be gravitational potential energy or electric potential energy. A mass cannot have electromagnetic energy. It is only the propagating electromagnetic waves that can have electromagnetic energy. A mass cannot have a kinetic energy $E=mc^2$ unless the mass is moving at the speed $v=(2^{1/2})c$, which is indeed possible since any mass can travel at any speed. As, we have seen, there is no speed limit.

However, in the case of Special relativity, the energy E cannot be equal to $mc^2$ since no mass can start at speed c and no object cannot travel at speed of light in Special Relativity. The relationship $E=mc^2$ is inherent in Special Relativity since Special Relativity is based on the false concept that the light is relative. Light is not relative. When the light is not relative, no mass at rest can have a speed c relative to light that gives a rest mass kinetic energy $E=mc^2$. Einstein's ubiquitous energy relationship $E=mc^2$ is false, $E\neq mc^2$. There is no relative mass. Time cannot be relative. Time and mass are absolute.

In Special Relativity, mass is relative. It is the relative mass that is conserved in Special Relativity. Without Special Relativity, there is no relative mass.

Since Special Relativity does not hold true, a mass cannot be relative. There is no relative mass. Mass is absolute. Mass is conserved. Mass and energy are not one and the same. There is no energy without masses. There is no kinetic energy without a mass. There is no entropy without a mass. Electromagnetic waves have no kinetic energy. Light has no kinetic energy. Light has no temperature. Light has no entropy. Although light has no energy, light can generate energy in the presence of charge particles. Since there is no charge without mass, we can say that the light cannot generate energy without mass. There is no light without mass. There is no massless energy.

"*There is no massless energy*."

Lorentz Transform is false since light cannot travel off its fixed track. It is the path (the track) of light with the light propagating on it that moves unaltered relative to an observer. It is the light LighTracklets (light bursts) that are relative, not the propagation of light. Light cannot propagate off the track relative to observers. Special Relativity inherited the same mistake. Lorentz and Einstein derailed the light train. They failed to realize that the light propagates on a track that is fixed in the vacuum, and the track can only be altered by a medium; the track is fixed in a medium.

Physical constraints of the track must be incorporated into relativity for the relativity to be meaningful and logical. When we incorporate the physical limitation of the path into relativity, there is nothing special about the relativity and hence no special theory is required. Light travels at whatever the speed light travels on its fixed track relative to any observer. Although the light travels on its fixed track at speed c relative to observers, the track of light moves unaltered against the motion of the observers relative to the observers. It is the speed of a light burst (LighTracklet0 that is relative, not the propagation of light. Relative motion of light bursts is not defined by Maxwell equations. It is the propagation of light that is defined by Maxwell equations. Light does not propagate relative to moving frames. Maxwell equations do not hold on moving frames. Constancy of the speed of light is naturally guaranteed without any Special Relativity or a Lorentz Transform since the path of light is fixed in the vacuum and in a medium.

Galileo-Newton relativity applies only for motion of objects with unconstrained paths. Galileo-Newton Relativity does not apply for constrained motions or propagation. If a train travels at speed c, the speed of the train relative to any moving observer remains the same c irrespective of the speed of observer. A train travels on its own track, and the speed of the train is observer independent. It is the track that moves unaltered relative to observers, not the train. It is the TRAINTRACKLET (the train and the track as a composite unit) that is relative, not the train. Observers cannot derail a train.

It is the LIGHTRACKLETS that are relative, not the propagation of light. Both the track of light and the speed of light are fixed in a vacuum and can only be altered by a medium. The speed of light on its track is unaffected relative to observers. Propagation of light is not relative; it is observer independent. It is the track that moves unaltered relative to observers against the direction of the observers, not the light itself. Observers cannot derail light.

Both Lorentz and Einstein derailed the train. Relativity must take the physical constraint of the path into account. When the physical constraint of the path of light is included in relativity, the physical constraint of the speed of light will automatically fall into place; we do not have to force the constancy of the speed of light into relativity. Both Einstein and Lorentz fail to incorporate the fixed path of light in the vacuum or in a medium into the relativity. Light has no freedom to travel off its fixed track. Light does not exist off its track since the path of light is fixed in the vacuum and in a medium just as a moving train has no existence off its track and moving Bulldozer has no existence off its track.

## IV. **CONSTRAINED RELATIVITY IN A NUTSHELL**

1. Once a burst of light is out of a source, light propagates in the vacuum and the speed, direction, and path of light are fixed in a vacuum and can only be altered by a medium. The speed of propagation of light is determined by the vacuum and it is affected by a medium, not determined by a medium. Light propagates in free space even when a medium is present. When light is propagating in a medium, if the medium is pulled out, the light does not move with the medium. Light cannot be bound to a medium or a frame. Massless frames are hypothetical. Massless cannot move. Hypothetical massless frames cannot move. What is there are moving objects. Light does not propagate in a medium or on inertial frames. Light propagates in space [5]. There are no moving massless frames. There are moving objects. Light does not propagate relative to moving objects. Observers cannot make light propagate on moving objects. Maxwell equations do not hold relative to moving objects [2].

2. Speed of a train on its track is observer independent. Speed of a bulldozer on its track is observer independent. Speed of an armored vehicle on its track is observer independent. Speed of light on its track is observer independent.

3. Speed of light is a constant in the vacuum and affected by the medium simply because the VELOCITY of Light is fixed in the vacuum or in a medium.

4. If velocity of light is not fixed in the vacuum or in a medium, the speed of light cannot be a constant in the vacuum or in a medium.

5. The speed itself of an entity can never be observer independent realistically without the path of that entity being observer independent; in other words, without velocity being fixed in a medium. Speed of light could not have been a constant if the velocity of light had not been observer independent.

6. Light having a fixed speed, a fixed direction and a fixed track is not a contradiction to the relativity since those properties naturally hold relative to any observer moving at constant speed or at an acceleration.

7. There is no light propagating along the paths in Einstein's moving cabin in Special Relativity. The light paths in Lorentz Transform, Special Relativity, and General Relativity are imaginary; no real light can exist on those paths. The track of light cannot be changed without change of the medium. Light cannot exist off its fixed track. The paths in Lorentz Transform, Special Relativity, and General Relativity are off the track and hence hypothetical, not real.

8. Speed of light on its track is always constant relative to any observer. We do not have to make it a constant. We do not need a Special Theory for the speed of propagation of light on its fixed track to be independent of observers; it is naturally observer independent. Constrained Relativity (CORE) is natural and maintains natural constrains of light relative to moving observers. No Special Relativity Theory is required.

9. Observers cannot alter the physical reality. Relativity cannot alter the speed, the path, and the direction of propagation of light. Relativity cannot alter the mass and, dimension of an object, and time. What moving observers see cannot alter what it is. It is only the change of the absolute speed of an object that can alter its physical reality.

10. Speed of an object cannot be limited by speed of light. There is no speed limit in the universe. An object can travel at any speed v, where $-\infty<v<\infty$. Speed of light is just the speed of light, nothing more. Anything can travel or propagate faster than the speed of light c.

10. Speed of propagation of light on its track is observer independent just as speed of a train, speed of a Caterpillar or a bulldozer on their tracks are observer independent. What is relative is the track, not the train on the track. It is the track that moves unaltered against the motion of an observer.

11. Motion of a train has no existence outside its track. Motion of a bulldozer has no existence outside its track. Propagation of light has no existence outside its track.

12. Any entity that has no existence off its track cannot be relative. Any entity that has no existence off its track is observer independent. Any entity moving or propagating on a fixed track cannot be relative.

13. The motion of a light burst is relative. What we see is the motion of light bursts, not the propagation of light. The light we see is relative. Maxwell equations do not apply to light we see since what we see is light bursts, not the propagation of light. The speed of the motion of a wave burst on its track is the same as the speed of propagation of light. A wave burst or LighTracklet is the propagation of light together with its track as a single entity. Relative to a moving observer, a light burst or a LighTracklet has an additional speed component against the motion of the observer equal to the speed of the observer. This additional relative speed component cannot change the speed of light on its track. Observers cannot bend a train track or a track of light.

14. A light burst is no different from a massless steering-disabled bulldozer except that the track is not a rotating track. The propagation of light on its track is equivalent to a bulldozer on its track. Although the track of a bulldozer is relative and depends on the motion of observers, the speed of the bulldozer on its track is not relative and independent of the observer motion.

15. The speed of light in a vacuum is fixed. The direction of light in a vacuum is fixed. The path of light in a vacuum is fixed. The propagation of light together with its track as a composite entity represents a LighTracklet or a light burst. Propagation of light on its track is unaffected by the observer motion. It is the track that moves unaltered relative to observer motion and hence it is a light burst or a LighTracklet that is relative. Although track of light moves against the motion of an observer, the track, the direction of propagation of light on the track, and the speed of light on the track are unaltered by the relative motion. The propagation of light on the track is independent of the motion of observers.

16 A moving medium cannot drag light. The changes in the medium density with the position in a moving medium changes the speed of light giving the impression that the moving medium is dragging the light. A moving medium cannot drag light. Light propagates in the vacuum and affected by the density of the medium.

Naturally Constrained Relativity (CORE) makes light naturally observer independent. No special theory of relativity is required. Mass and dimensions of an object and time are unaffected by the observer motion; they are observer independent. Relativity between light and a moving mass is not reciprocal. A light burst can move relative to a moving mass, but a mass cannot move relative to a light burst. A rest mass has no motion relative to light and hence there is no rest energy, $E \neq mc^2$.

There is no limit to the speed v an object can travel at and hence, $-\infty<v<\infty$. The speed of an entity is not limited by the speed of light. Speed of light has nothing to do with the speed that any other entity can travel at. The ubiquitous claim that "no entity can travel faster than light" is false. Observer motion cannot alter the reality. The laws of nature are not determined by observers; observers just try to discover them.

A mountain does not move just because a runner sees it as moving relative to the runner. A train track does not move just because a moving observer sees it as moving. A path of light does not move just because a moving observer sees it as moving. A light burst travelling in a fixed direction in a vacuum or in a medium is seen by different observers as if it is travelling unaltered in different directions depending on the speed of the observers, but the speed and the direction of propagation of light on its fixed track are the same for all the observers travelling at different speeds irrespective of whether they are moving at constant speed or accelerating.

Relativity Theorem:

If the path of the motion or propagation of an entity is naturally fixed in the vacuum or in a medium, the speed of motion or propagation of that entity is not relative.

Corollary:

If an observer is naturally prohibited to alter the path of a moving entity by natural constraints, then, the motion or propagation of that entity is not relative.

"*The ubiquitous claim that 'no entity can travel faster than light' is false. Anything can travel faster than light. There is no speed limit.*"

Galileo-Newton relativity is not general; it applies only for motion of objects with unconstrained paths. Not every motion in the universe is unconstrained. Track of a train is a constrained path. Track of light is a constrained path. Galileo-Newton Relativity does not apply for constrained paths such as a train that travels on a fixed track or propagation of light where speed and path are fixed in the vacuum and in a medium. The Constrained Relativity (CORE) incorporates the constrained motion into the Galileo-Newton Relativity. The Constrained Relativity (CORE) extends the Galileo-Newton relativity into constrained motions and propagations.

For path-constrained motion, it is the track that moves relative to the motion of an observer against the direction of motion of the observer, not the object itself. Both Lorentz and Einstein derailed the train (light). Relativity must take the physical constrain of the motion into account to prevent unrealistic ghostly outcomes that are common in Special Relativity and General Relativity. Light has no freedom to propagate off the track just as a train has no freedom to travel off the track. No observer can alter the propagation direction of light since it is fixed in a medium just as speed of light is fixed in a medium. Lorentz Transform, Special Relativity and General Relativity are false since they do not account for the path constrain of light. Real light does not propagate on the paths in Lorentz Transform, Special Relativity, and General Relativity.

Light does not propagate on a moving frame or in a medium [5]. Light propagates in the vacuum space. Light comes in LighTracklets or wave bursts. The path of light bundled together with propagation of light as a single composite entity constitutes a LighTracklet. LighTracklet is just like a steering-disabled massless bulldozer except that the track is linear, not a rotating track. A LighTracklet moves at the speed of light on its track. LighTracklets are not particles. What we see as light is the motion of light bursts or LighTracklets, not the propagation of light; that is where relativity comes into play. Propagation cannot be relative. It is the motion that is relative. It is only the motion of LighTracklets that is relative.

Light propagates. Light does not move. It is a burst of light or a LighTracklet that moves. Since light propagates at constant speed on a fixed track, LighTracklets move at the speed of light on its fixed track. It is the motion of light bursts or LighTracklets that we see as light. The motion of light bursts that we see is relative. Propagation of light on its fixed track is not relative. Propagation of light on its fixed track is independent of the any observer irrespective of whether the observer is moving at constant speed or at an acceleration. The speed of light on its fixed track is independent of observers and determined solely by the vacuum and affected by a medium.

Propagation of a light wave withing a LighTracklet is independent of observer motion. It is the LighTracklet itself that moves relative to a moving observer while the direction of propagation of light on its track remains unaltered irrespective of whether the observer is moving at constant speed or at an acceleration. A LighTracklet shifts unaltered relative to an observer while the propagation of light wave withing the LighTracklet on its track remains unaltered relative to an observer. A LighTracklet moves on its track at the speed of light along the direction of propagation while moving unaltered against the observer at the speed of the observer; the track of light remains unaltered relative to observers.

Although the direction of propagation of light wave within the LighTracklet on the track is not relative, the LighTracklet itself moves unaltered relative to an observer since the track moves against the direction of motion of an observer relative to the observer just as a mountain moves against the direction of motion of an observer relative to the observer. Observer motion has no effect on the speed of propagation or the direction of propagation on the track. The train travels on the track at no other speed than its own designated speed irrespective of the observer motion. It is the track or the path that shift unaltered relative to moving observers just as mountain shifts relative to a moving observer unaltered.

A LighTracklet moves against the direction of the motion of an observer while maintaining the track unaltered. Propagation time of a light wave is unaffected by the shift of a LighTracklet with respect to a moving observer since observer motion can only shift the track unaltered relative to observers. Observer motion has no effect on the length of the track or the travel time. Observer motion cannot alter a track or the direction of the track. Light wave within a LighTracklet propagates at a constant speed on its track independent of observer motion. A LighTracklet shifts unaltered relative to a moving observer while the path of propagation and the speed of propagation on the path remain unaltered.

The track has no motion relative to the vacuum or relative to a stationary observer and hence the track has no motion relative to the vacuum or stationary observer. The speed of the LighTracklet relative to a stationary observer or the vacuum is the same as the speed of light and it is in the direction of propagation. Light does not propagate relative to reference frames since the track of light is fixed in the vacuum. Light propagates in the vacuum. Maxwell equations apply for propagation of light in the vacuum. Vacuum is the only frame of reference for propagation of light, the absolute frame. It is only the LighTracklets or light bursts that travel relative to observer's frame of reference. Maxwell equations do not apply for the motion of light bursts and hence the speed of motion of light bursts does not have to be a constant. Speed of an entity is not limited by the speed of propagation of light. The path and speed of light are fixed in the vacuum and are affected by a medium. The path, speed, and direction of light are observer independent.

Light propagates on its fixed track at the speed of light c and hence LighTracklets move at the speed of light c on its track. Relative to moving observers, a LighTracklet has an additional speed component against the direction of the observer motion equal to the observer speed v, in addition to its motion at the speed c on its track. So, the motion of a LighTracklet is relative. Even though LighTracklet moves unaltered relative to a moving observer, the propagation of light on its track is unaltered relative to moving observers. Relative to a stationary observer v=0, or the vacuum, the speed of the LighTracklet is the same as the speed of light c and it is in the direction of propagation of light in the vacuum. Relative to moving observer, the propagation of light on its fixed track is always unaltered. The path, direction, and the speed of light are fixed in the vacuum and are affected by a medium. The path, speed, and direction of light are observer independent.

"*It is the track that moves relative to observers just like a mountain moves relative to observers*.".

The time is independent of any observer. Observer motion cannot alter the time. Observer motion cannot alter an object of mass. Observer motion cannot alter the reality. There is no time dilation, no length contraction, no mass dilation. Observer motion cannot change the physical characteristics of an object. Time is independent of observers. We cannot change the direction of a train track by running away from it. We cannot change the direction of propagation of light by running away from it. Lorentz and Einstein derailed the train. A train cannot run off-track. Light cannot propagate off-track. A clock is an engineered device. Just as any engineered measuring instrument, clock must be calibrated for the environment it is in for it to display the correct time.

Lorentz Transformation is not unique [2]. Lorentz Transform is hypothetical and does not apply for propagation of light since light does not propagate relative to moving frames or observers. There are no massless motions. Propagation is not motion. Motion mechanics of Newton does not apply for light. There is no motion without a mass. There can only be a massless relative motion such as the motion of light burst (LighTracklet) relative to a moving observer; there is no actual motion of massless light burst here.

Relative motion is an observer perception since a stand still object can have a relative motion relative to a moving observer. There is no absolute motion of massless. The claim that "there is no absolute motion" is false since there is no relative motion without absolute motion. Light does not propagate on moving frames. Maxwell equations do not apply on moving frames. Maxwell equations apply only in the vacuum and affected by a medium. Light propagates in the vacuum and affected by the medium. Vacuum space is the absolute frame. Absolute speed of an object, which is the velocity of an object relative to the vacuum, can be obtained using a light burst [5].

Special Relativity and General Relativity [1] derailed the light-train. Lorentz Transform, Special Relativity, and General Relativity are invalid since the propagation of light, the path and the direction of light are independent of a moving observer irrespective of whether the observer is moving at constant speed or at an acceleration. Time is space independent. Spacetime is not unique and hypothetical. There is space. There is time. Time is a point, a moment, not a dimension. There is no 4-dimensional spacetime. Space is 3-dimensional, cannot be less, no need to be more. Any dimension less than or greater than 3D is hypothetical mathematical construct. Any dimension less than 3D cannot exist without 3D.

Acceleration of a moving object and stationary object under gravity are not the same. An observer in a cabin accelerating at acceleration g is not equivalent to an observer in a cabin at standstill under gravity g. Einstein claim that "an observer inside a closed cabin cannot determine if the cabin moving at an acceleration g or it is at stand still on a gravitational object with gravity g" is false. An observer in a closed cabin can experimentally determine if the cabin observer is in is moving or at stand still on a gravitational object with gravity g using a light pulse. Horizontal light pulse in a cabin moving at an acceleration takes a curved path relative to the observer inside the cabin, whereas it takes a straight

horizontal path if the cabin is at stand still on a gravitational object. If the cabin is moving at uniform speed, the light burst takes a straight angular path [5].

Einstein's equivalent principle is false. Special Relativity and General Relativity are false concepts. Here are some important points,

1. Relative motion cannot change reality. Only the absolute motion can change the reality. Absolute motion is the motion relative to the vacuum.
2. Time is not relative. The precision of a measuring instrument can be relative depending on its mechanism.
3. Time does not depend on gravity. The precision of a measuring instrument depends on gravity.
4. Time is a definition. A clock is an engineered device we use to measure our definition of time. What is displayed on a clock has no meaning for a caveman. A clock is nothing more than a mass for a gravitational object.
5. Lorentz Transform is not real.
6. Light paths in Lorentz Transform are off the track, not real.
7. Lorentz Transform is not unique.
8. Equivalence principle is invalid. Observers inside a closed cabin can determine if the cabin is at standstill on a gravitational object, it is accelerating, or it is moving at constant speed using the path of the relative motion of a light burst.
9. There is no spacetime. Time is not a dimension since there is no access to past or the future.
10. Propagation of light is not relative. It is only a light burst that have a relative motion relative to a moving observer. It is the fixed track of light that moves relative to an observer.
11. Maxwell equations do not hold relative to inertial frames. Maxwell equations holds only in the vacuum and affected by a medium.
12. What we see as light is the motion of light bursts. Motion of light bursts is relative. Maxwell equations do not govern the motion of light bursts. There is no speed limit to the relative motion of light bursts.
13. Space cannot expand or contract. It is only the matter that can expand or contract.
14. Spacetime function is not unique.
15. Relative time is not unique.
16. Relative motion cannot alter an object physically,
17. Gravity has no effect on light, the massless.
18. Time cannot be a dimension.
19. Light paths in General Relativity are not real.
20. Curvature of space is meaningless. Warping of space by gravity is meaningless. It is a material medium that is warped by a gravitational object, not the space itself.
21. Light does not propagate in a medium or on moving frames. Light propagates in a vacuum and affected by a medium.
22. Relativity does not require a special theory since the path, direction, and speed of light are naturally fixed in the vacuum and in a medium.

Both Newton and Einstein claimed that no observer in a closed cabin moving at constant speed can determine if the cabin is moving or at standstill; this claim is false. An observer in a closed cabin not only can determine if the cabin is moving at constant speed or stationery but also can determine the speed of the cabin and the direction of motion of the cabin using a light burst. Since the propagation of light is not relative, Special Relativity and General Relativity, and Quantum Mechanics have no theoretical basis for their existence [3,4]; they are hypothetical, unrealistic, and bizarre; they are a result of not accounting for the fixed path of light, which is observer independent. Universe can exist without us on few small patches of habitable land surrounded by an ocean of undrinkable water on a minor planet in a minor orbiting system in a minor galaxy in the vast universe of mostly useless junk. If the universe had been a work of a creator, the work of that creator is not praiseworthy, a bad design, waste of resources. The universe cannot be a work of an intelligent designer or a creator.

Laws of nature are observer independent. Most importantly, it is not just the speed of light that is observer independent, the path and the direction of light are also observer independent since all of them are fixed in the vacuum and can only be altered by a medium.

Speed of light does not have to be forced to be a constant relative to observers if the fact that the path of light is fixed in the vacuum and in a medium had been accounted for; it is this negligence that led to Special Relativity and General Relativity which are unreal and illogical. Forceful imposition of constant speed of propagation of light relative to observers with a total disregard to the fact that it is not just the speed of light that is fixed relative to the observers, the direction and path of light are also fixed, is what made the Modern Physics chronically ill. The CORE is the treatment for the core of the illness in Modern Physics.

## V. DETERMINING THE SPEED OF A CLOSED MOVING CABIN FROM WITHIN

Both Newton and Einstein claimed that every motion is relative and there is no absolute motion. They also claimed that it is not possible for an observer inside a closed cabin to find out if the cabin is moving at constant speed or it is at standstill. These two claims have been the foundation of physics. Both these claims are false.

There cannot be a relative motion without an absolute motion. The existence of relative motion is an indication that there is an absolute motion. If an object is moving relative to one another, either both objects must be moving or one of the objects is stationary, and the other is moving. Newton came to the wrong conclusion that there is no absolute motion since he was only considering the motion of masses and not much was known about the propagation of light at the time. Newton only considered the motion of masses. Motion dynamics are independent of inertial motions and hence there was no possible way of determining the absolute speed of an object at the time. We cannot obtain the absolute motion of a mass using another mass since motion of a mass is relative. As a result, it is understandable why Newton thought the determination of absolute motion was an impossibility at that time, but it is not the case any longer. Einstein also came to the same conclusion since he incorrectly forced the propagation of light to be relative. Einstein forced the light to be relative by forcing an fake momentum on light to bring the propagation of light and motion dynamics together into a unified framework. The fact is that the propagation of light and the motion of masses cannot be under unified framework since they are two completely different processes. Propagation has no motion. Motion has no propagation. Light has no momentum. Any entity with a momentum cannot propagate. Light is not relative [2]. As we have seen, Special Relativity and General Relativity are imaginary since they are based on light paths that are not real. Special Relativity and General Relativity are a result of light derailment. Derailment of light from its track is naturally prohibited.

Light travels relative to a vacuum. A LighTracklet or a burst of light moves relative to a moving mass. As we have seen, an object of mass cannot travel relative to light and hence Einstein's energy relationship does not hold, $E \neq mc^2$. A mass at rest in a vacuum does not have a rest kinetic energy equal to $mc^2$. Relative motion of a stationary mass does not have a kinetic energy. A mass does not have kinetic energy $mc^2$ unless the mass is moving at speed c from the start. There is nothing preventing a mass moving at the speed of light c and hence a mass can have energy $mc^2$ if the mass is moving at speed c from the start, which is impossible. Stationary mass cannot start moving at constant speed from the start. If the mass is moving at speed c, its kinetic energy will be $E=(1/2)mc^2$.

Kinetic energy of a mass has nothing to do with speed of light c unless the mass is travelling at speed of light c. Speed of a mass is not limited by the speed of light c. There is no speed limit in the universe. Even though a mass cannot travel relative to light, we can use the propagation of light to obtain the absolute speed of a mass since propagation of light is not relative. Absolute speed of a mass is the speed of a mass relative to a vacuum.

If an observer in a closed cabin wants to determine if the cabin is stationary or moving, observer can do that using a burst of light at least theoretically. However, there are practical difficulties since the speed of a cabin is much less than the speed of light. Light propagates relative to vacuum. Propagation of light on its fixed track is not relative, independent of observer motion. Even though propagation of light on its fixed track is not relative, a burst of light (LighTracklet) move relative to observers. Light observers see is moving light bursts, and light bursts move relative to observers. Even though propagation of light is not relative, light bursts (LighTracklets) are relative An observer inside a cabin can release a burst of light from the bottom of the cabin vertically and obtain the direction of the light burst relative to the cabin since the motion of the light burst (LighTracklet) is relative [5]. If the light burst or LighTracklet travels vertically straight up, then the cabin is at standstill. If the light burst travels on a straight path at an angle θ to the cabin floor, then, the cabin is moving at a constant speed and the speed of the cabin v is given by, $v=c/\tan(\theta)$ or $v \cong c/\theta$. If the path of the light burst is a curved path, then, the train is accelerating.

Definition: Absolute Motion

The motion of an object in the vacuum is the absolute motion. Absolute speed is the speed of an object relative to the vacuum. Absolute speed can be measured using a burst of light since the light is not relative. There is no relative motion without an absolute motion.

The ubiquitous claim that every motion is relative is false and archaic. Why Newton made that claim is perfectly understandable since the propagation of light was not understood in the era of Newton. Einstein had no option but to go on repeating the same false claim since he forced a fake momentum on light to develop his artificial unification of the propagation of light and the motion of masses. Propagation of light and motion of masses cannot be unified; there is nothing common in the propagation of electromagnetic waves and the motion of masses. Electromagnetic energy and kinetic energy are not the same. Energy E of a mass m is given by $E=mc^2$ if and only if the mass m is moving at speed $v=(2)^{1/2}c$, otherwise $E \neq mc^2$. A rest mass has no kinetic energy. A rest mas is at rest. Ubiquitous relationship $E=mc^2$ is meaningless. For a rest mass $E \neq mc^2$.

You cannot get a mass by dividing electromagnetic energy E by $c^2$, $m \neq E/c^2$. Massless has no momentum. If you divide electromagnetic energy E by the speed of light c, what you get is nonsense, not a momentum p, $p \neq E/c$. It is only the kinetic energy E of a mass m divided half the speed (v/2) that gives the momentum $p=E/(v/2)$ of the mass. Any entity that has no standstill existence has no momentum. Light has no standstill existence and hence has no momentum. Energy of a mass has nothing to do with speed of light c unless the mass is moving at speed of light c. You cannot fake a momentum on massless. If light has a

momentum, light cannot propagate.

## VI. **CONCLUSIONS**

What we see is light bursts, not the propagation of light or electromagnetic waves. What is relative is what we see. It is the light bursts that we see are relative. We do not see the propagation of electromagnetic waves. What we do not see are not relative. Propagation of light is not relative. Light propagates in the vacuum and can only be altered by a medium. The path of light, the direction of light, and the speed of light are all fixed in the vacuum and can only be altered by a medium.

The speed of light we measure is depends on how we use to measure the speed of light. If we determine the speed of light using the motion of light bursts, then, the speed of light we obtain is relative. If we measure the speed of light using the propagation of electromagnetic waves, then, the speed we obtain is not relative. Light propagates on a fixed path in a fixed direction, at a fixed speed in the vacuum, which is independent of the motion of observers. Light bursts move relative to observers.

In the case of a moving train, it is the track that moves unaltered relative to observers, not the train itself. It is the TRAINTRACKLET (the train and the track together as a composite unit) that is relative, not the train itself. Speed of the train is not relative. The speed, direction, and the track of the train is unaltered relative to observers. The light is no different. It is the track of light that moves relative to observers unaltered, not the light itself. Speed of the propagation of light on its fixed track is not relative. It is light bursts or LIGHTRACKLETS (propagation of light and its track together as a composite unit) that are relative, not the propagation of light itself. What we see is the motion of light bursts or LIGHTRACKLETS, not the propagation of light. The propagation of light on its fixed track is not relative. Light bursts or LighTracklets move relative to observers.

"*If the velocity of light had not been fixed in a medium, the speed of light could not have been a constant in a medium. No entity in the universe can have a fixed speed in a medium without the velocity of that entity been fixed in the same medium. Speed of any entity cannot be observer independent without velocity of that entity being observer independent. It is fixed track of light that moves unaltered relative to observers, not the light itself. The speed of light on its fixed track is independent of observers.*"

Galileo-Newton Relativity applies for motion of objects that are free of physical constraint. Galileo-Newton Relativity does not apply for a train moving on a track since train is not free to change the direction relative to the observer motion. Constrained Relativity (CORE) applies to motion of object under constrained such as the motion of a train relative to a moving observer irrespective of the observer is moving at constant speed or under acceleration. In Constrained Relativity (CORE), the track of the train, the direction of the train, and the speed of the train on the track remain unaltered relative to a moving observe. In Constrained Relativity (CORE), it is the track that shifts unaltered relative to moving observers, not the train itself. Galileo-Newton Relativity, Special Relativity, and General Relativity do not apply to a moving train since train has no motion outside the track.

Light propagates in a vacuum. The propagation speed of light, the direction of propagation of light, and the path of light are fixed in the vacuum and in a medium. It is only a medium that can alter the propagation speed of light, the direction of propagation, and the path of light. In the case of light, we have light on a fixed track travelling at constant speed. The propagation speed of light, the direction of light, and the path of light must be observer independent.

Lorentz Transform, Special Relativity, and General Relativity keep the speed of light fixed by letting light to derail. Light has no propagation off its track. Light does not exist off its track. In Lorentz Transform and Special Relativity light cease to exist since light is off its track in them. Lorentz Transform and Special Relativity do not have real light in their paths since the paths are off the track; light in them is imaginary. Lorentz Transform, Special Relativity, and General Relativity are physically invalid, not real.

In Constrained Relativity (CORE), the speed of propagation of light, the direction of light, and the path or the track of light remain fixed relative to moving observers. What is moving unaltered relative to observers is its fixed track, the fixed path of light. The CORE maintains the constant speed of light while keeping the light-train on the fixed light-rail track. CORE does not allow light to derail relative to a moving observer. Relativity should accommodate the natural constrains.

When the propagating light wave together with the path of light are bundled together as a composite entity, it represents a light burst or LighTracklet. When we light, what we see is the motion of light bursts or LighTracklets, not the propagation of light. If we are moving, relative to us, light bursts are moving against us while travelling at the speed of light along its fixed track. It is the fixed track that moves unaltered relative to an observer. The speed of a light burst depends on the observers. Speed of propagation of light on its fixed track is independent of observers.

A light burst moves. Light propagates. Propagation of light is not relative. However, propagation of light bundled together with its track, which is a light burst or a LighTracklet, is relative. LighTracklet moves, light propagates. Light has no mass. A LighTracklet has no mass. As a result, relativity between a LighTracklet and a moving object is not reciprocal. A LighTracklet is relative while maintaining the speed of the propagation of light, the direction of the light, and the path of light fixed and hence observer independent, not relative. However, a moving observer cannot be relative to a wave burst since a wave burst has no standstill existence. For an object to move relative to

another entity, that entity must have a standstill existence. Light has no stand still existence. For an entity that does not have a standstill existence, nothing moves relative to that entity. Light has no standstill existence. As a result, light cannot see other entities relatively. No object is moving relative to light.

"*When we see light, what we see is the motion of light bursts or LighTracklets, not the propagation of light*. *The motion of light bursts is relative. The propagation of light on its fixed track is not relative.*"

If we have a track of light that is at an angle to the motion of an observer, the track itself moves unaltered relative to the motion of an observer against the direction of the observer just as a mountain moves relative to a person running away or towards the mountain. Speed of light or a train on its track remains the same relative to any observer. Light propagates on its track at constant speed relative to an observer whether the observer is stationary or moving at constant speed or at an acceleration.

If a mass cannot have a motion relative to the propagation of light, Einstein's mass energy relationship does not hold and $E \neq mc^2$. Any entity with momentum must be able to be stopped by applying equal and opposite momentum. Light cannot be stopped by any means since light has no stand still existence and hence light has no momentum. It is the enforcement of a false momentum on light in Special Relativity that made light relative and led to the relationships $E=pc$ and $E=mc^2$, where $p=mc$ is the non-existent momentum. With no justifiable reason, de Broglie arbitrarily substituted the momentum $p=mv$ for a particle moving at speed v in the equation $E=pc$ to introduce imaginary concept of particle waves and the de Broglie wavelength of particle waves. The relationship $p=mc$ is not real. De Broglie wavelength is not real. The relationship $E=pc$ does not apply to momentum of a particle moving at any speed v. In any case, since light has no momentum $E \neq pc$. Massless has no momentum. You cannot force a momentum on light by proclamation. Since a mass cannot move relative to light, $E \neq mc^2$ and $E \neq pc$. When $E \neq pc$, de Broglie wavelength in Quantum Mechanics has no existence, Quantum Mechanics has no existence.

The claim by both Newton and Einstein that an observer in closed cabin cannot determine if the cabin is moving or at stand still is false. An observer in a closed moving cabin can determine if the cabin is moving or at stand still using a vertical burst of light. If the cabin is moving the burst takes an angular path while it takes a vertical path if the cabin is at standstill. The angle of the burst is related to the speed of the cabin. If the burst takes a curved path, the cabin is accelerating.

There is no time dilation. Time is not relative. There is no mass dilation. Mass is not relative. There is no length contraction. Length is not relative. Time and mass are absolute. Special Relativity introduced the concept of the conservation of relative mass. When Special Relativity does not hold, there is no relative mass and hence the mass must be conserved. Mass is conserved just as Newton claimed.

Lorentz Transform and Einstein's Special Relativity and General Relativity are based on the false assumption that the speed of light is the only thing that is fixed in the propagation of light. Speed of light is not the only thing that is fixed in the propagation of light. Just as the speed of light is fixed in the vacuum, the direction of light as well as the path of light are also fixed in the vacuum. By disregarding the fact that the direction of light and the path of light are fixed, both Lorentz and Einstein let the train derail in the Lorentz Transform, Special Relativity, and General Relativity. As a result, the fallacy of Lorentz Transform, Special Relativity, and General Relativity are obvious. They do not represent the true nature of the light. Lorentz and Einstein were so preoccupied in maintaining the speed of light constant, they failed to check the blind spot.

When we incorporate the fact that the speed of light, the direction of light, and the track of light are fixed in the vacuum or in a medium, the propagation of light is naturally observer independent. Relativity must take into the physical constrains of the motion. Relativity cannot and should not derail the light. Constrained Relativity (CORE) can keep a train on track relative to observers NATURALLY. Galileo-Newton Relativity derailed the train relative to observers. Galileo-Newton Relativity cannot keep the propagation of light independent of the motion of observers. Special Relativity and General Relativity derailed the train. Special Relativity and General Relativity cannot keep the propagation of light on its fixed track independent of the observers. It is the Constrained Relativity (CORE) that keeps the propagation of light independent of observers naturally. It is the Naturally Constrained Relativity (CORE) that keeps a train on track independent of observers. Natural Constrained Relativity (FORE) keeps the speed, direction, the track of propagation of light fixed in the vacuum and in a medium independent of motion of the observers. Propagation of light is not relative naturally.

"*Speed itself cannot be a universal constant without velocity being universally fixed. An observer cannot bend a train track by running towards or away from it. An observer cannot bend a path of light by running towards or away from it*. *The motion of a track or path of light relative to a moving observer is no different from the motion of a mountain relative to a moving observer; it is an observer impression, not real.*"

Speed of any entity cannot be a observer independent without the path of that entity being observer independent. Speed of light in the vacuum is a universal constant since the path of light is fixed in the vacuum or in the medium. No entity can have speed alone fixed in the vacuum without having a path that is fixed in the vacuum. The speed, direction, and

the track of light are all fixed in a vacuum and can only be altered by a medium.

An entity with velocity that is fixed in the vacuum or medium can be fixed relative to moving observers. Special Relativity requires hypothetical time dilation, mass dilation, and length contraction to keep the speed of light fixed in a medium simply because the path of light is observer dependent in Special Relativity. Lorentz Transform and Special Relativity are not necessary for light to have a constant speed relative to moving observers since the path of light is fixed in the vacuum or in a medium. It is not the speed of light itself that is fixed in a medium, the path of light is also fixed in the same medium.

"*Nothing can derail the light*."
"*Relativity does not require a special relativity theory*."

Since the Relativity must be abided by the natural constrains, it is the train track that moves unaltered naturally against a moving observer, not the train itself. It is the track of light that moves unaltered naturally against the motion of an observer, not the light itself. When the track moves relative to an observer, it takes the train that is travelling on it with it, without altering the speed of the train on the track and its direction. We do not need a theory to enforce it. Speed of a train on its track is independent of the motion of observers naturally. The direction of a train on its track is independent of the motion of observers naturally. Speed of propagation of light on its track is independent of the motion of observers naturally. Both Lorentz and Einstein derailed the light. They missed the blind spots. Light paths in Special Relativity are imaginary, there is no actual light on those paths.

Lorentz and Einstein let the light derail from its track just to force the speed of light to be fixed relative to moving observers. No such enforcement is necessary. The motion of an observer cannot alter the direction of propagation and the path of light just as the motion of an observer cannot alter the speed of light since they are all fixed in the vacuum and can only be altered by a medium. No Special Theory of Relativity is required to make the speed of light observer independent since light propagates on a fixed track in a fixed direction at a fixed speed that are fixed in the vacuum and altered only by a medium, which is independent of observers. Light having a fixed speed on its track, a fixed direction, and a fixed track is not a contradiction to the relativity. What is contradictory in Special Relativity is the forcing of a fixed speed on light by allowing the light to derail from its fixed track that light cannot exist without, which resulted bizarre behaviors in Special Relativity.

Unnatural reciprocal time and mass dilation, reciprocal length contraction, and reciprocal space dependent time are not required for light to have fixed speed relative to moving observers; they are the result of derailing light in Special Relativity. Relativity is naturally constrained to guarantee the light a fixed speed, a fixed direction, and a fixed path relative to any observer irrespective of whether the observer is moving at constant speed or at an acceleration. A train cannot be off the track relative to observers.

Light does not propagate on moving frame or in a medium. Light does not jump from one moving frame to another or one medium to another. Observers do not see propagating light waves. What observers see are the moving light bursts. Maxwell equation do not govern the motion of light bursts. Maxwell equations cannot be transformed onto moving frames. Light propagates in the vacuum, and it is evident since light does not move with the medium if the medium is pulled out. Moving medium cannot drag light. It is the speed of light that changes in a moving medium, since the density of the medium changes, giving the impression of a drag. The speed, direction, and the path of light are fixed in a vacuum, and they can only be altered by a medium. Propagation of light in the vacuum is absolute. Light does not propagate anywhere except in the vacuum, the absolute frame. The motion of light bursts that we see is relative.

The answer to the question paused at the beginning of the introduction is clear. The speed and direction of a train is unaltered relative to any observer irrespective of the direction and speed of the observer, irrespective of whether the observer is travelling at constant speed or accelerating, and irrespective of whether the observer is on a straight path or on a nonlinear path.

Speed of a train on its track is observer independent. It is the track that is relative, not the train. Track moves unaltered against the direction of motion of the observer at the speed of the observer in the same way a mountain moves against a moving observer relative to the observer. If we replace the track with a massless track and the train with the propagation of light, what we have is a light burst, which is the propagation of light on its fixed track including the track, a LighTracklet. Propagation of light is no different from a train since light propagates on its own fixed track in the vacuum and in a medium. The speed, direction, and the track of light can only be altered by a medium, which is observer independent. Observers cannot alter the direction, speed, and the track of a train. Observers cannot alter the direction, speed, and the track of the propagation of light. Relativity cannot alter the reality. Relativity contains the path constrains. Relativity is naturally a Constrained Relativity (CORE). If an entity has no path constrain, then, the CORE is simply the Galilean-Newton relativity. No Special Theory is required for relativity. Special Relativity is not real since light has no off the track existence.

The motion of light bursts (LighTracklets) take place in observer's reference frames. The motion of a light bursts is relative. Maxwell equations do not apply for the motion of light bursts. There is no speed limit for the motion of light bursts. The propagation of light takes place on its own fixed track in the vacuum, the absolute reference frame, and affected by a medium. Maxwell equations apply for the propagation of light. Speed of light is constant only for the propagation of light, not for the motion of light bursts. The speed,

direction, and the path of the propagation of light are fixed in a vacuum and they are observer independent. Light does not propagate on observer's reference frames. Light bursts move in observer's reference frame. What we is the motion of light bursts, and as a result, the light we see is relative. Maxwell equations do not govern the motion of light bursts that we see.

"*The existence of a fixed path of light in the vacuum and in a medium is both necessary and sufficient for the speed of light to be observer independent*."

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